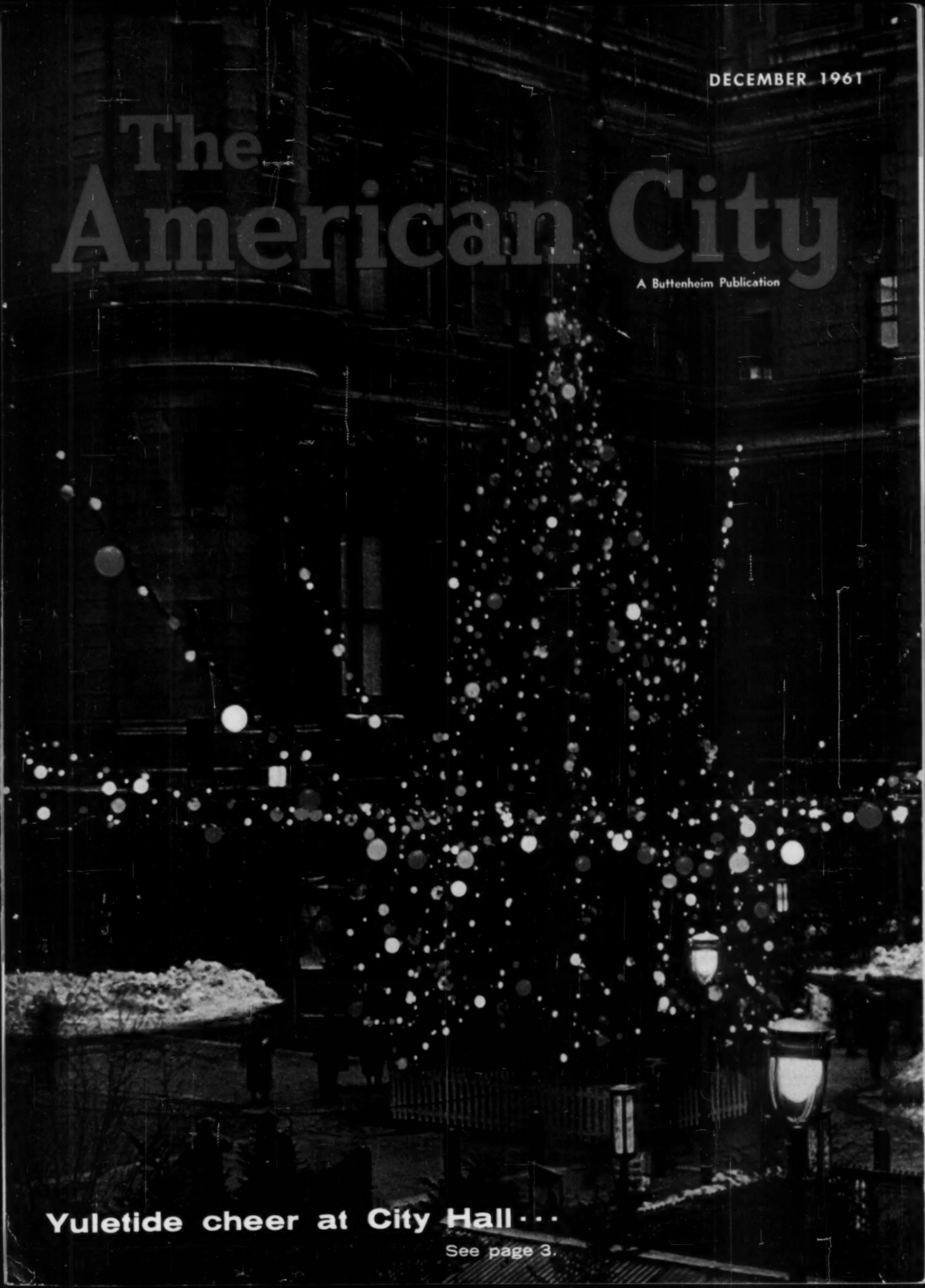
DECEMBER 1961

The American City

A Buttenheim Publication



Yuletide cheer at City Hall···

See page 3.

DEPENDABLE
MUELLER® PLANT VALVES...

provide economical operation in:

• Water Filtration Plants • Sewage Treatment Plants • Pumping Stations • Power Plants • Industrial Plants • Drainage Projects • Flood Control Projects

NEW HEAVY DUTY CHECK VALVES

Specifically designed to reduce wear caused by repeated opening and closing in such applications as pump suction and discharge lines. Heavily constructed, all working parts are made of high strength materials, assuring dependable, maintenance-free operation. *Three styles available:* Swing type • Swing type with Lever and Weight • Swing type with Lever and Spring.

Specifications: Iron body, fully bronze mounted • Bronze seat ring • Bronze disc ring or rubber faced disc • Flanged, screwed or hub ends • 175 p.s.i. working pressure • 350 p.s.i. test pressure • Sizes 2½″ through 12″. • Waterworks Check Valves also available in sizes 14″ through 24″ with Hub or Flanged ends.

MUELLER CO.
CHATTA. TENN.

FLAP VALVES

For use where automatic flow control is required in one direction only and to the atmosphere such as drains through river levees to prevent backflow.

Specifications: Iron body, fully bronze mounted • Bronze seat ring, disc ring and hinge pin • Flanged, hub or spigot frame • Sizes 4″ through 24″.

SHEAR GATES

Where manual flow control to the atmosphere in either direction is required, shear gates provide dependable operation. Full gate opening with no obstruction of the orifice is assured by the Mueller design. Slight closing wedge-action gives positive seal.

Specifications: Iron body, fully bronze mounted • Bronze seat ring, disc ring and hinge pin • Flanged, hub or spigot frame • Sizes 4″ through 24″ • Furnished with lift handle and catch.

MUELLER CO.
CHATTA. TENN.

MUD VALVES

Used for draining tanks or reservoirs by mounting in the floor. Normally furnished with a 2″ square nut, Handwheels, extension stems and floor stands are available and may be specified.

Two styles available: Non-rising stem or self-contained rising stem.

Specifications: Iron body, bronze mounted • Bronze seat ring, disc ring and stem • Flanged or spigot frame • Non-rising stem sizes 3″ through 24″ • Rising stem sizes 4″ through 18″.

VALVE OPERATING EQUIPMENT

A complete selection of extension stems, geared floor stands, floor stands, bench stands, overhead chain and sprocket wheels, wrenches and other valve operating equipment and accessories are available.

Contact Your Mueller Representative or write direct for complete information and specifications.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

6389

The American City
A Buttenheim Publication

DECEMBER 1961

MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

(For Annual Editorial Index, see pages 193-198)

ADMINISTRATION, GOVERNMENT AND PURCHASING

Alden W. Welch 7
Our municipal notebook 13
Automation plus indoctrination 91
Municipal group insurance 93
Phoenix turns auctioneer 102
New type of wage-salary plan 133
Municipal public relations 137
Purchasing news 161

STREET CONSTRUCTION AND MAINTENANCE
STREET CLEANING AND SNOW REMOVAL

Don't knock rock 9
Ben Franklin, street-paving pioneer 9
Motor patrols attack the hills 14
Loading snow on narrow streets 14
Austin's compact paving-repair unit 78
Contract snow plowing 86

OUTDOOR LIGHTING

A do-it-yourself Christmas tree 71
Faster, safer, more efficient 101
Public support brings new lighting 114
Residential mercuries 117
Light for the jug handles 123
A realistic price for street lighting 123
Sanger "enlarges" parking lot with lights 126

SEWERAGE AND SEWAGE PURIFICATION

This movie stars a commission 25
Six-year, $46,000,000 sewerage program 25
A separate sewer department in a small city 76
Wrens and worms aid sewage plant 100
Modern sewer-service charges, Part III 142

TRAFFIC CONTROL

A fresh idea in parking-structure design 80
We "button down" good traffic practices 105
Pavement-edge markings reduce accidents 109
Aberdeen scooter-patrols parking violators 111
Where curb parking is an acute problem 111
Expressway has reversible center lane 113

REFUSE COLLECTION AND DISPOSAL

White uniforms for sanitation and safety 33
Miami makes "crash" trash pick-up drive 33
You don't need a tall stack 74

PLANNING, ZONING AND HOUSING

Yorktown's "tax-balanced" land-use plan 88
Downtown Grand Rapids decides to compete 94

WATER SUPPLY AND TREATMENT

A mushroom "grows" into the sky 23
116-mgd plant for Montevideo, Uruguay 23
One operator does everything 72
A cathodically protected city 83
Frothing faucets 96

PUBLIC SAFETY

Portland's cab-forward fire trucks 31
Warning signals 31
Seattle's plastic police boat 31
FBI reports crime at all-time high 118
Try a citizens' band radio system 129

AIR POLLUTION

Air pollution control news 26

PARKS AND PLAYGROUNDS

Brush chipper pays for itself 20
Small vehicles aid park departments 20
Cicero's aluminum swimming pool 89

DEPARTMENTS

Featured this month 5
Letters to the editor 26
Free catalogs 34
Zoning and planning decisions 149
Legal notes 151
City managers 153
Conventions: when and where 154
Municipal and civic publications 157
Municipal bond market 159
About people 176
Professional service directory 179

(For index to advertisers see page 191)

The Cover Picture

The American City
Yuletide cheer at City Hall

Philadelphia's 50-foot-plus community Christmas tree in the middle of the City Hall courtyard typifies festive decorations that bring color and pleasure to cities across the nation. Last year carolers in Philadelphia serenaded their fellow men from a special stage erected near the giant tree's base two or three times daily. On one occasion when a bus breakdown delayed the group of singers, spectators spontaneously organized their own choral group, with pianist.

Another Pennsylvania city with a truly Christmas name, Bethlehem, Pa., fashions its own tree in a novel manner. The story of this unusual Yuletide decoration appears on page 71.

TELEPHONE
TELEPHONE

Outdoor telephones give your citizens 24-hour convenience and protection

He misses the last bus, and he has to call a cab.

She has a flat tire, and she needs to call a service station. The show ran late, and they want to call the babysitter.

At night, outdoor phones are as welcome to your citizens as street lights. Outdoor phones are always open. They hear your citizens' voices when your streets are silent.

Outdoor phones give this same kind of convenience and protection during the day, too. And they give your city extra revenue—without adding one cent to your municipal taxes.

There are three handy types of outdoor phones—the Airlight Booth, the Walk-Up Phone and the Drive-Up Phone.

To learn how your city and citizens can profit from them, just call your local Bell Telephone Manager. He'll promptly arrange for a custom-designed telephone plan for your city. Our services are free and are offered without obligation.

BELL TELEPHONE SYSTEM

Volume 76 Number 12

The American City

William S. Foster, *Editor*
Elroy F. Spitzer, *Engineering Editor*
Rodney R. Fleming, *Public Works Editor*
Gary M. Chamberlain, *Associate Editor*
Sheila C. Malton, *New Products Editor*
William T. Dulac, *Production Manager*
William de R. Taaffe, *Asst. Prod. Mgr.*

Editorial and Executive Offices:

470 Park Ave. South, New York 16
MUrray Hill 5-9250
Edgar J. Buttenheim
Chairman of the Board
Donald V. Buttenheim, *President*
George S. Conover, *Vice President*
Edgar M. Buttenheim, *Publisher*
Arthur B. Burgan, *Assistant Publisher*
G. E. Carney, *Treasurer*

Sales Offices:

New York 16 • 470 Park Ave. South
MUrray Hill 5-9250
Myron MacLeod, *Advertising Manager*

Chicago 6 • 400 West Madison St.
FInancial 6-4611
Warner H. Robinson
Ted K. Ashmos

Cleveland 14 • 1814 Superior Bldg.
CHerry 1-1755
Warren K. Vieth

Lookout Mountain 8, Tenn.
101 North Bragg
TAylor 1-2853
Curtis R. Buttenheim
Southern Sales Manager

Los Angeles 27 • 1870 Hillhurst Ave.
NOrmandy 5-5143
Albert T. Miller, *Pacific Coast Mgr.*

Ormond Beach, Fla.
30 Ocean Crest Drive
Frank J. Raymond

THE AMERICAN CITY is issued monthly by BUTTENHEIM PUBLISHING CORPORATION. Subscription rates: $4 in the U. S. and Canada; $7 in all other countries of the world. Single copies, 75 cents. Back copies, $1. Entered as second-class matter July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature. Copyright, 1961, by Buttenheim Publishing Corporation, 470 Park Avenue South, New York 16, N. Y.

ASSOCIATED PUBLICATIONS

CONTRACTORS and ENGINEERS
OVERVIEW
Municipal Index
MART
AMERICAN SCHOOL AND UNIVERSITY

FEATURED THIS MONTH

► One Water-Works Operator page 72

. . . can run the new water-treatment plant and booster station in Redding, Calif., and still have time to repair and test water meters. This skillfully designed water works undoubtedly has features that you can use in your water-works program.

► An Incinerator With a Short Stack page 74

. . . but designed so that it scrubs the fly-ash out of the stack gases is providing Winchester, Ky., with a refuse-disposal facility that is not likely to annoy the neighbors and downgrade land values. Read about it and keep the article handy in case your engineer wants to build an incinerator with the old-fashioned high stack with attention-drawing blinking lights.

► Compact, Hurry-Up Street Repair Unit page 78

. . . that boosts efficiency while reducing manpower requirements is an idea coming out of Austin, Texas, that you may want to try out in your own city.

► An Offstreet Parking Structure page 80

. . . with some refreshing ideas on simplicity of design and operation may help solve your downtown parking problems. This building is not cluttered with columns; it can be erected quickly, at low cost, and has attention-commanding display windows.

► Cathodic Protection page 83

. . . of water-works structures in Decatur, Ala., gets a thoroughgoing examination that discloses measurable benefits and documents annual costs per square foot of protected surface.

► Contract Snow Plowing page 86

. . . may appear necessary in cities with limited budgets and personnel, says the town manager of Winthrop, Maine. However, he feels that a city that owns its equipment and does the job with its own forces will do the work better and at lower cost. Read what he says and see if you agree.

► "Tax Balanced" Land Use page 88

. . . is the planning policy adopted in Yorktown, N. Y., to avoid throwing too heavy a financial burden on residential properties. See if it has possibilities for your municipality.

► An Aluminum Swimming Pool page 89

. . . shaped like a big T is a corrosion-proof, maintenance-free recreation facility in Cicero, Ill.

► An Old Downtown on the Upgrade page 94

. . . is the story of what is happening in Grand Rapids, Mich., today. See if the example here holds possibilities in your city.

► Frothing Faucets page 96

. . . meant an all-out program of water and sewer construction in Bloomington, Minn., and an All-America City Award for civic alertness.

► Next Month's Three-Star Special

Problems of the Soviet City Engineer—This is a special presentation based on translations from Soviet technical journals, giving what we believe is the first opportunity to have an insight into this aspect of life behind the iron curtain. The Soviet engineers tell, with disarming frankness, of their frustrations, difficulties, and growing problems. They provide interesting and thought-provoking solutions relating to water supply, sewerage, street construction, snow removal and similar services. This will help you understand them better, and understanding is one of the principal forward steps needed in a peaceful world.

Quality *costs less* in the long run!

BJ Vertical Circulating Pumps

Designed to deliver water in large volume, BJ Vertical Circulating Pumps are in use on some of the Nation's largest industrial and governmental projects.

These BJ Quality Pumps are ideal for cooling tower circulation, irrigation service, flood control projects, municipal primary water pumping, river intake, dewatering for large construction, condenser circulation, industrial processing and other big jobs which demand the economy of long, reliable service.

Operating continuously with high efficiency, BJ Circulating Pumps are self-priming and require only a simple installation. Available in capacities to 50,000 GPM *in standard models,* and beyond on special order!

Atlantic City Electric Co.

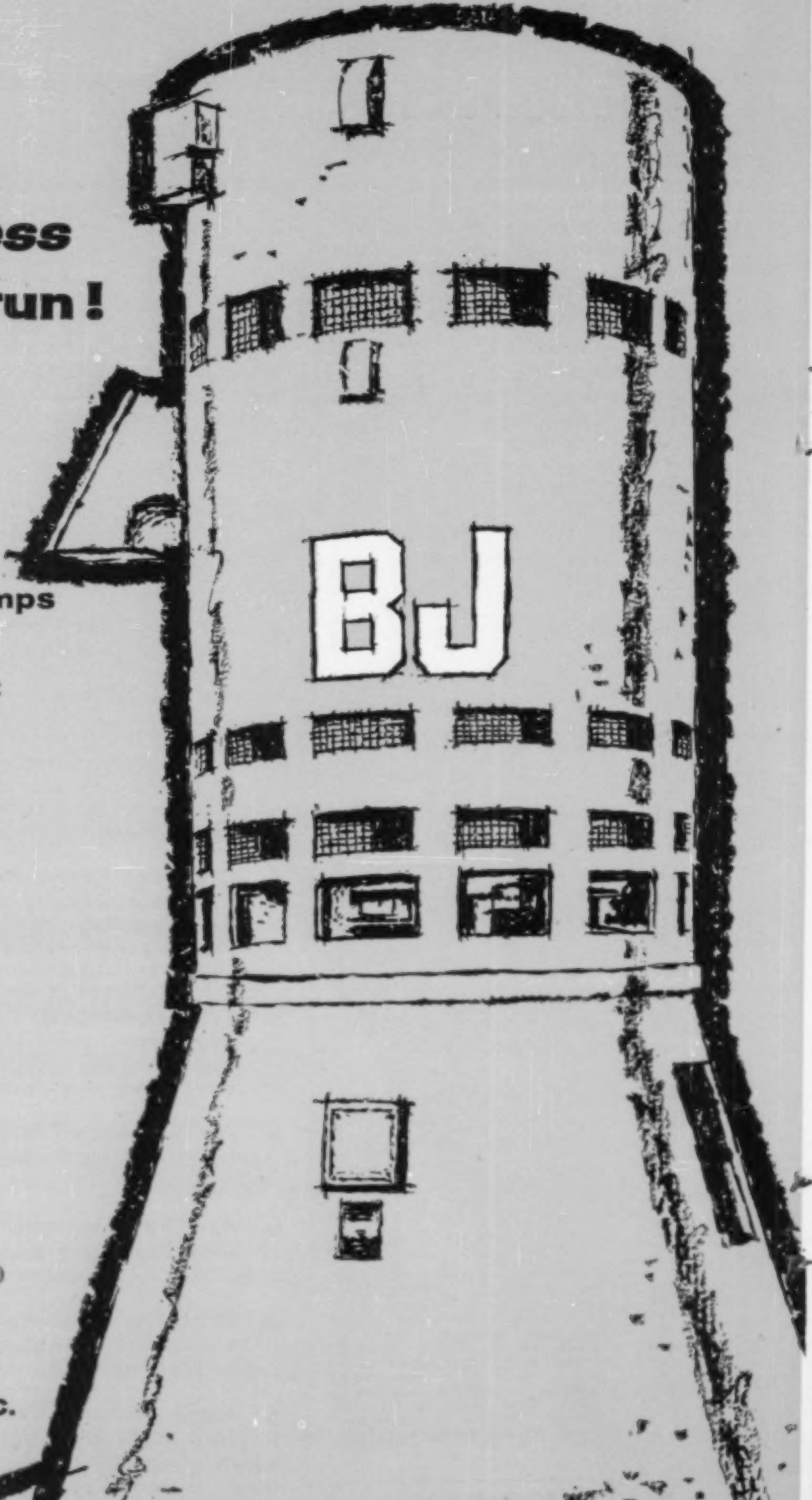
of Gibbstown, New Jersey, has installed two BJ Vertical Circulating Pumps in their Greenwich Station. Rated at 20,000 and 10,000 gpm, both pumps have a head of 160 feet.

BYRON JACKSON PUMPS, INC.

Subsidiary of Borg-Warner Corporation

P.O. Box 2017-A, Terminal Annex,
Los Angeles 54, California

BW



Alden W. Welch

One feels a sense of confusion along with sorrow when he loses a friend who has been a source of strength and inspiration for more than a quarter of a century. The editorial staff of THE AMERICAN CITY is no exception.

Alden W. Welch, Research Editor of this magazine since 1934, passed away October 30th, at the age of 73. He was a graduate in electrical engineering at Pratt Institute, in the class of 1908. For the first six years following graduation, he served in the engineering department of the Edison Electric Illuminating Co. For the next 20 years, he was a member of the editorial staff of *Engineering News,* which later became *Engineering News-Record.* During this period, he originated and developed that magazine's Construction Cost Index.

In 1934 he joined the editorial staff of THE AMERICAN CITY, specifically to develop editorial leadership in the important fields of street lighting, traffic control and public safety. He also assumed responsibility for conducting research and market studies in this growing field of urban development.

This gave him the opportunity to give constructive editorial leadership to some of the fastest-changing areas of our urban life. He took part in the development of the parking meter, the off-street parking lot and structure, in the development of various traffic-control devices. He was present with editorial counsel encouraging the adoption of voting machines, mechanized municipal accounting systems, the use of central purchasing departments. He helped to guide the new profession of traffic engineers.

At the same time, he was given responsibility for developing our annual reference publication, "The Municipal Index." One of his major contributions to the increase of its usefulness was his monumental "Who's Who in Equipment and Supplies." This regular feature is without doubt the most thorough compilation of equipment suppliers serving the municipal field available anywhere.

Mr. Welch was not only known for his vigor and imaginativeness but also for his sharp and perceptive sense of humor. He rarely let it be wasted but would sprinkle his arguments with incisive wit that would enable him to make his point, causing his opponent to chuckle when losing the argument. On other occasions he would use it to completely demolish an attitude of ostentation.

At one time a young sales engineer came to Mr. Welch's office to, as he described it, "bring him up to date on the subject of parking meters." Mr. Welch sat there quietly and listened until the salesman said, "Of course, one of the earliest of these installations was in Oklahoma City."

"I know," Mr. Welch said softly. "I was there at the time, watching it go in."

This was just enough to let this young man realize that he was talking with the one man in the entire nation who probably knew the most about the history of parking meters.

Mr. Welch could be caustically critical of anything that he felt savored of hyprocrisy or short-sightedness. At the same time, he was generous and unselfish. One of the programs that he liked to urge for traffic relief was what he chose to call a "traffic strainer." This consisted of a circumferential highway around the central business district, designed to be served conveniently by off-street parking structures or other facilities. At one time a consultant asked him for complete details on his proposal and then incorporated it bodily into a design that he was preparing for a certain city, without acknowledging the source.

Alden W. Welch

Mr. Welch was jubilant. "The important thing," he said, "is that the idea be used, not who receives credit."

The coolness with which he faced his final end demonstrated his vast amount of courage and refusal to accept defeat. A few years ago he underwent a major operation which meant, as he calmly put it, that he looked death squarely in the eye. But before going to the hospital, he prepared copy sufficient for four months in advance so that the editorial program would move smoothly until his return.

When he learned that again he would have to return to the hospital, we found that he had prepared for this with that same sort of deliberateness. He had carefully coached his assistants on how to review and bring up to date the "Who's Who in Equipment" material. His editorial file was again full of copy for future issues. As a matter of fact, we still will be using it for the next two or three months.

Success has different meanings to various people. But to those with perception and understanding, a man has lived a full and successful life if he has made it possible for his fellow man to improve his life and surroundings. On this score Alden W. Welch rates high. Cities from Maine to Hawaii, from Alaska to Puerto Rico, all benefit from the vigorous, stimulating editorial counsel that he has provided them throughout these years.

The best winter life insurance – STRAIGHT STERLING ROCK SALT

Every test devised shows straight rock salt the most efficient, economical way to safe, bare pavements.

What is a safe pavement? National Safety Council definition: "Maximum safety is provided when ice and snow are completely removed, leaving a bare pavement." Straight Sterling Rock Salt's melting power is the fastest, surest way to bare, skid-proof pavement.

How effective are abrasives? Spread abrasives on snow, and they sink down out of sight and out of traction; on ice—wind and traffic scatter abrasives off the road. In the spring you'll waste time and money cleaning them out of storm sewers, catch basins and drainage ditches.

How about abrasives and salt mixes? Abrasives cut down salt's terrific melting power—even insulate the snow and ice from the sun's rays. You still have a lot of costly hauling, and you *still* have to clean up the mess in the spring.

Costs? Sterling Rock Salt is most economical. One truckload of Sterling Rock Salt goes five times further than the same truckload of abrasives. Sterling Rock Salt costs about one-half to one-third as much as other ice-melting chemicals. Thus, your highway maintenance dollar goes further—much further.

Is rock salt effective at lower temperatures? Straight Sterling Rock Salt has effective melting power at temperatures below zero! Just increase the amount of rock salt as the temperature drops.

And other removal methods? The Department of Engineering of one of our largest cities tested *straight* rock salt against chemicals, abrasive mixes, and radiant heat. Result: This large city now uses nothing else but straight rock salt.

Sterling Rock Salt leaves a *bare* pavement . . . freezes dry. Other chemicals frequently dissolve so quickly that they do not melt through the snow or ice to the pavement. Dangerous refreezing occurs when the temperature drops. When they *do* melt to the pavement, other chemicals do not freeze dry but leave a slick, wet, dangerous driving surface.

To order Sterling Rock Salt contact our nearest district office. International Salt Company, Clarks Summit, Pa.

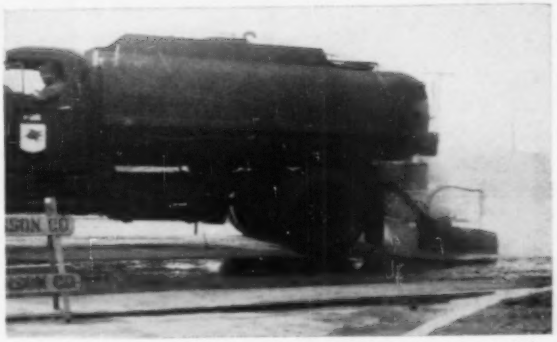
INTERNATIONAL STERLING SALT SALT COMPANY

THE ONLY SAFE PAVEMENT IS A BARE PAVEMENT

DISTRICT OFFICES: BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • DETROIT • NEWARK • NEW ORLEANS • NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS

Don't knock rock

A truck distributes the Number 4 coverstone.



SC-6 is a slow-curing asphalt, cut back slightly.

The standard seal coat of hot asphalt with rock rolled into it lasts longer, costs less and causes fewer problems for property owners than the newer, more glamorous slurry seals. We obtained these facts after experimenting with slurry seals, which some residents of Pico Rivera, Calif., seem to prefer for their shiny black surface.

When we discarded the experimental slurry seal for the standard type some drivers complained about "the rough, gravel surface," not realizing, apparently, that it provides high skid resistance. A few residents also objected to the loose stone which traffic soon distributed to the gutters. A pass with the street sweeper after the seal cured dispelled these fears.

We also explained to everyone that, although the regulation seal costs somewhat more to apply, it lasts twice as long as the slurry, making it more economical on the basis of length-of-service-rendered. It also adds a layer of determinable thickness. If they wish proof, we direct them to the streets which received the experimental slurries so that they can inspect the many cracks which have reappeared after only one year of service.

Slurry seals require closing the street the previous day to prevent vehicles from entering the area. Without this precaution residents would find themselves blocked in their own driveways during the 24-hour curing period necessary for slurry seals. Where drivers do not respect the barricades the seal as well as the automobiles suffers. The longer curing period also increases the possibility of children tracking the asphalt from the street onto the kitchen and living-room floors from which it is extremely difficult to remove.

Another disadvantage is that water from lawn sprinklers which sometimes reaches the street will wash away the slurry seal during the long drying period. Although moisture will also damage the regular seal, its shorter curing duration tends to reduce the possibility of this.

We expect to continue the regular sealing program with 0.2 of a gallon of SC-6 and 13.5 pounds of graded ½-inch stone per square yard so that each street will receive an armor coat every seventh or eighth year.

To improve public relations, we now distribute a blue card to each residence that indicates on which date the sealing crews will perform this maintenance work on the street. Additional information includes a description of the process and the reasons which make it necessary.

L. C. Kramer
Director of Public Works
Pico Rivera, Calif.

Ben Franklin, street-paving pioneer

Most people are familiar with Benjamin Franklin's feats as a printer, publisher, inventor, scientist and politician. Some will recall that he was instrumental in starting the first police force and the first fire-fighting service. Few know that Franklin was a pioneer in the field of street paving as a municipal service.

In his autobiography Franklin writes, "Our City, tho' laid out with a beautiful Regularity, the Streets large, strait, and crossing each other at right angles, had the Disgrace of suffering those Streets to remain long unpav'd, and in wet Weather the Wheels of heavy Carriages plough'd them into a Quagmire, so that it was difficult to cross them. And in dry Weather the Dust was offensive . . . By talking and writing on the Subject, I was at length instrumental in getting the Street pav'd with Stone between the Market and the brick'd Foot Pavement that was on each Side next the Houses."

Philadelphia citizens were so pleased with the result, that, within his lifetime, Franklin saw paving become a municipal service. In fact, it was wily Ben who introduced the Assembly bill creating this service. ◄◄

IN BROOKINGS COUNTY, S.D.

COST RECORDS SPEAK

ONE OF THREE Cat No. 12 Motor Graders owned by Brookings County helps maintain some 500 miles of county and township roads. Brookings County also owns three Cat D7 Tractors and a 944 wheel-type Loader.

The Commissioners of Brookings County, S. D., wanted to know how much it cost to operate *each* of the county's nine motor graders. So, back in 1957, the Highway Department began to keep cost records on individual machines.

Result? Look at Highway Superintendent Gene R. O'Connor's cost chart on the opposite page.

Note that the three Cat No. 12 Motor Graders cost less per mile to operate than any of the other six machines, representing four different makes. The average cost per mile for the three Cat machines was $0.61; average cost per hour was $2.41.

Even the first machine listed has an impressive record—yet this is a 1945 model, built before Caterpillar introduced the exclusive oil clutch.

Comparing this first machine with the other two Cat Graders indicates the cost-saving advantage of the oil clutch. Mr. O'Connor reports that the second listed Cat Grader received its first clutch adjustment after 5000 hours. No clutch adjustment has been required on the third grader in 6615 hours.

Records *do* speak for themselves. They enable you to take into account the cost of operation and repairs—a practical yardstick which helps determine a machine's true value.

Are you keeping records on your individual machines? It takes only a few minutes a day. Your Caterpillar Dealer will be glad to supply you with free Cost Record Books that may help you set up a more useful record system.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

FOR THEMSELVES

MOTOR GRADER COST RECORDS are presented to Brookings County Board Chairman Edward Tofte (right) by Highway Supt. Gene R. O'Connor. Seen in the background are (from left) Commissioners Louis Overocker, Louis Heesch, E.D. Robertson and O.P. Dahl.

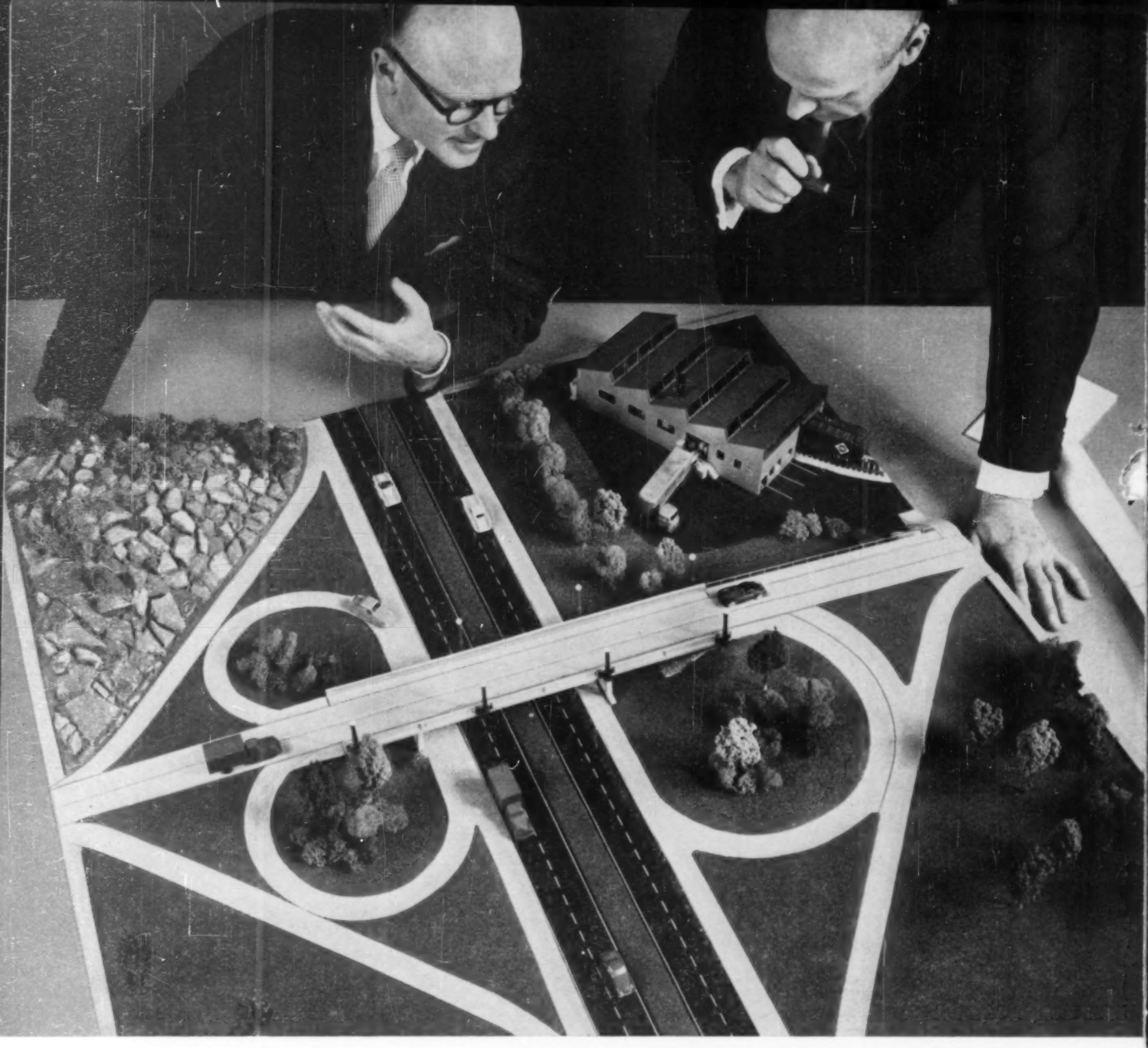
MOTOR GRADER COST RECORDS, Brookings County, S.D., 1957 through 1960

Make	Total Operating Cost	Total Hours	Total Miles	Cost Per Hour	Cost Per Mile
Cat No. 12	$20,830.64	8064	28,204	$2.58	$0.74
Cat No. 12	22,541.26	8970	39,062	2.51	0.58
Cat No. 12	10,623.22	4944	20,377	2.15	0.52
Brand A	13,555.37	4181	14,933	3.24	0.90
Brand B	23,578.04	8111	27,449	2.91	0.86
Brand B	16,551.69	5762	19,754	2.87	0.84
Brand C	8,263.82	3283	10,182	2.52	0.81
Brand C	21,122.89	7585	25,298	2.78	0.83
Brand D	16,550.20	5918	21,755	2.80	0.76

COUNTY'S COST RECORDS include, in addition to miles and hours, the cost of fuel, oil and grease, parts and supplies, labor, repairs and operators' wages.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



When it comes time to appoint a trustee or fiscal agent for revenue bonds, The Chase Manhattan Bank is at the service of state, county and municipal authorities. Chase Manhattan has the staff and experience to handle this function as trustee or fiscal agent in cooperation with banks in the areas where the projects are located. For complete details write: Corporate Trust Division, The Chase Manhattan Bank, 1 Chase Manhattan Plaza, New York 15.

OUR MUNICIPAL NOTEBOOK

COMPUTER SETS PRIORITY

For street repair in San Diego, Calif., Public Works Director Verne Parker measures the street condition with a mechanical "roughometer," inventories the data on punched cards, and lets the IBM machine sort and classify the findings on the basis of the roughness, and also the importance of the streets, i.e. major, feeder, or residential. The city adds new streets continually to the inventory, as it accepts new subdivisions. Occasionally, the director orders special runs to check conditions if special situations arise.

* * *

THE WIDE STREETS

. . . in Salt Lake City represent the practical approach to the city planning done by the famous Mormon leader Brigham Young who was looking to immediate needs rather than projections of the future.

In 1847, he instructed Orson Pratt to take eight span of oxen hitched to a covered wagon and trailer and make a series of turns to determine how much space they needed to turn completely around. The 132-foot streets that now grace this city are the result of that century-old test.

* * *

FINANCING STREET IMPROVEMENTS

Twin Falls, Idaho, uses two methods, each requiring the property owners to bear a portion of the cost. The first requires the owners to pay the city for the cost of materials used; the city in turn supplies all supervision, labor and equipment to do the job. Street Superintendent H. H. Ballenger uses this to provide a four-inch compacted-gravel base and an asphalt surface treatment.

The second method consists of setting up a local improvement district and apportioning the costs evenly on an area basis. The city permits the property owners to make ten equal annual payments. This method finances improvements awarded to contractors.

* * *

ALL-PURPOSE SERVICE TRUCK

Englewood, N. J., boosted the efficiency of its park and shade tree department some 30% by acquiring a service truck that is a maintenance building on wheels. The truck is fitted with compartments so that it can carry a Disston two-man chain saw; a 2,500-watt, 115-volt Homelite gasoline-powered generator; 200 feet of floodlight cable; floodlights; loud speaker for easy communication with the men in the trees; ropes; power winch; ladders; trimming and climbing equipment. The cab of the truck will carry a crew of five.

* * *

SOME REASONS

. . . for good street lighting that people often forget and that justify lighting to daylight visibility around the clock include these important points from the American Optometric Association:

- *The average 55-year-old person with 20/20 vision requires twice as much light to see as well as a 20-year old.*
- *Color sensitivity is lost at low levels of illumination.*
- *Glare decreases visual sensitivity.*
- *At 50 mph a person sees 14% less than he does at 45 mph.*

These, of course, do not include the usual and important benefits such as aiding traffic, reducing crime, increasing downtown business and augmenting the city's attractiveness.

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

* * *

UTILITY CARRIES TAX LOAD

The earnings of the municipal electric plant in Wauchula, Fla., carry roughly 70% of all municipal expenses in the city. Earnings paid for the operation of the fire department, street paving and maintenance, sewage disposal, refuse collection, the library and several miscellaneous items. The plant started operating about 40 years ago. The plant has five diesels, varying from 300 to 1250 hp. All are Fairbanks-Morse units.

* * *

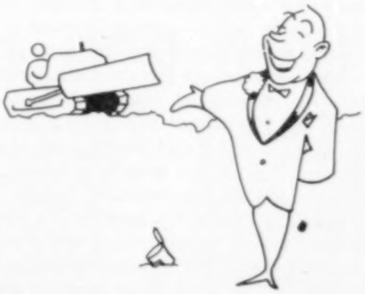
RECORD FOR CHANGING METERS

. . . is apparently 11 seconds, held by John R. Bettis of the Charleston, S. C., water department. He made the record at a South Carolina Water and Sewage Works meeting held in Sumter, S. C., at the offices of the Cities Supply Co. His record, made while changing meters in a Ford Yokebox, sliced eight seconds off the previous mark.

* * *

A SANITARY-FILL TEA PARTY

. . . was the way Westport, Conn., convinced the public that refuse disposal by this method would not create a nuisance. Some 500 residents of this prosperous, residential community took part in the affair, presided over by a tuxedo-garbed master of ceremonies. The fill operation takes place in a closely controlled area. A Caterpillar tractor compacts the refuse into layers about five feet high and covers each layer with at least one foot of earth at the end of the day. ◄◄



Turning around at the bottom of the hill, the operator maneuvers into position for the return trip.

Snow removal in the business district begins at 4 a.m.

Motor patrols attack the hills

Experiments with motor patrols and truck plows on the hilly terrain of Council Bluffs, Iowa, indicate that the graders displace snow more efficiently than do the truck plows under these conditions.

Going downhill, both accomplish the task with ease. But the patrols, with their lower gear ratios, are able to plow on the uphill trek with little additional effort where the truck plows lose their effectiveness. Because the city contains many flat areas as well as hills, the Department of Public Works employs three truck plows and three graders, two L-W Adams and one Galion, for snow removal with each doing the portion of the job for which it is best suited.

When snow begins to fall, we dispatch the three salt and sand spreaders to keep traffic moving. If the accumulation totals more than a few inches, the truck plows and graders move onto the job. At midnight the three patrols leave the hill district and begin windrowing the snow in the main business district. Four hours later another crew starts picking up the snow with a SnoGo and hauling it away. Only downtown do we actually remove the snow, although we do plow every street in the city.

After plowing, an operation that requires less than 24 hours, the salt and sand spreaders again tackle the cleared streets to remove any trace of slipperiness that the big equipment has left behind.

ART SARRATT
Director of Public Works
Council Bluffs, Iowa

Loading snow on narrow streets

At first glance, narrow streets might appear to be superior to wide ones for snow-removal purposes. But our twisting, restricted-width thoroughfares result in difficult snow fighting because we lack maneuvering space for equipment and cannot store snow on the streets; we must remove the snow completely from a high proportion of our streets.

Without the new Minneapolis Moline crawler tractor and its three-yard bucket, which we purchased a year ago, the severe snows of last winter would have found us digging and hauling for almost a week after each to return the streets to traffic. The loader reduced this task to a matter of hours.

Provincetown dates back to the time of the Pilgrims. It has narrow streets which were adequate for horses and foot travel but are not adequate for today's traffic. To load snow from these narrow thoroughfares, employees find it necessary to lift the snow over the truck's end gate rather than over the more convenient side. The new loader reaches all parts of the truck box and provides balanced, full loads. The loader we formerly used did not have the lift or the reach to do an adequate job. Its bucket was also too small.

A semi-enclosed cab protects the operator from excessive cold, enabling him to perform at a higher rate for longer periods of time. We chose the crawler treads to permit this piece of equipment to plow through drifts which would deter a rubber-tired machine.

WALTER E. LAWRENCE
Town Manager
Provincetown, Mass.

The long reach deposits the snow near the front of the box.

NEW JOHN DEERE 2010
JOHN DEERE
700
ELEC
D

It takes a big schedule to keep this one busy!

Extra power does make a difference—and the "2010" has it! Fifty engine horsepower pays benefits on jobs from trenching and loading to landscaping—provides fast moves from job to job. Power steering boosts performance at the gravel pit and on busy city streets. Low-profile design adds stability to improve backhoe work, speed excavating, material handling jobs.

Constant-mesh transmission provides eight speeds forward, three reverse, to handle the wide variety of power-matched equipment offered.

Center-mounted and offset-digging backhoes operate with two-lever control. Heavy-duty loader has single operating lever for lift arms and bucket, which is self-leveling. Landscape equipment includes rear blades, scarifier-scraper, rake, and combination fertilizer-seeder. Sideboom with hydraulic counterweights is also available for gas, water, and other utility construction work.

For detailed specifications on new John Deere "2010" Wheel Loaders and equipment, and a demonstration on your job, contact your John Deere dealer through the classified telephone directory. John Deere, 3300 River Drive, Moline, Illinois.

JOHN DEERE

LOADERS
BACKHOES
BULLDOZERS
AND
EARTHMOVING
EQUIPMENT

"A 5% saving in operating cost plus higher resale value is why we're buying Ford Trucks exclusively"

says James Lafferty, Transportation Manager for Henkels & McCoy, Inc., Philadelphia, Pennsylvania

"We ran a six-month comparative test on six Ford Trucks against six equivalent competitive models and found that the Ford Truck operating costs consistently ran 5% less than the others. Also, the increasing popularity of Fords with truck users means that we invariably pick up an extra $100 to $200 at resale time.

"Our company has 441 Ford Trucks operating from one end of the country to the other. Less than 20% of our fleet is within practical traveling distance of our two maintenance depots, so we depend on local Ford Dealers for the bulk of our service work. The complete network of Ford Dealers—even in remotest areas—provides unparalleled service everywhere.

"We specialize in handling construction and maintenance jobs. For example, we maintain utility lines, telephone lines, gas pipelines, and put in city and shopping center lighting systems. On these jobs, our trucks usually have to make their own way, road or no road. We use Ford F-250 4-wheel drive pickups in transporting crews to construction sites and F-600's to handle telephone line or pipeline construction, while our T-750 Tandem Axle trucks are equipped with a boring unit to dig 11-foot-deep holes for powerline transmission poles.

"Ford's rugged dependability, universal adaptability and superior economy keep us buying Ford Trucks exclusively."

Solid testimony that Ford's full-time economy only starts with low price!

FORD TRUCKS
COST LESS

FORD TRUCK
CERTIFIED
ECONOMY
REPORTS

PRODUCTS OF Ford MOTOR COMPANY

FORD

This compact Model H-30B can handle such a variety of jobs that it is

always busy

every season of the year

Equipment that stands idle in the garage or yard much of the time because there is no work it can do, is a poor investment. On the other hand, a machine that can be used and useful all twelve months of the year is an investment in tax-saving you can always be proud of.

This is why the multi-purpose, all-season usefulness and work-ability of the compact Model H-30B PAYLOADER has been verified and acclaimed by public bodies of all kinds and sizes, from states to townships—why it has become one of the most popular machines ever made available for public works use!

All-seasons 4-wheel-traction. Four-wheel drive and large tires, plus power-transfer differentials, enable it to go wherever you need it at speeds up to 21 m.p.h., and work fast and efficiently when it gets there. Its better traction, greater power and more rugged design costs you only a few cents more per hour to own than light utility-type loaders, yet it can do 25 to 50% more work per hour.

Big Capacity, Easy Operation, Safety. The H-30B can outperform many larger machines because of design features that provide greater operator efficiency, safety and visibility. It is the only loader in its class with a "full" power-shift transmission that does not require stopping and engaging gears for a range shift. There are three speeds both forward and reverse, and all shifts in either direction can be made "on-the-go."

It has power-steering, and the powerful four-wheel sealed brakes can be applied with or without disengaging the transmission—another exclusive feature in this size. It is the only loader in its class with boom arms positioned ahead of, and away from the operator. There is an adjustable bucket-type seat, and the sloped-down front and simple boom mechanism gives the operator unmatched visibility.

Easy Servicing, Less Maintenance. The H-30B is the only loader in its class with simplified boom mechanism and single bucket tilt cylinder having 6 to 12 fewer pivot and grease points to service. All bucket and lower boom-arm pivot points are sealed against dust and dirt. The battery, instrument connections, fuel tank and transmission can be serviced from ground level.

Extra Dividends. Every H-30B owner can take advantage of one or more of the useful optional attachments that are available for it—attachments that have been carefully engineered to insure easy mounting and efficient operation on this PAYLOADER. They greatly extend the job range of the loader and its tax-saving potential!

There is the patented *Drott "4-in-1" Bucket* that can do shovel, clam, scraper and bulldozer operations—can grasp and load slabs, stumps, trees and curbstones.

The *Wain-Roy Backhoe* attachment is the finest of its kind—built by the originators of the hydraulic tractor backhoe. It mounts and dismounts easily with only four pins and two hose connections.

Ram Pick-up Sweepers and Blacktop Spreaders—also Snowplows of the Rotary, V, and Blade type—are also available.

The 1¼ cu. yd. Model H-30B offers a choice of gasoline or diesel power, and optional buckets from ¾ to 2½ cu. yd. for handling materials of various weights. Your HOUGH Distributor is ready to show you all the advantages of this PAYLOADER. He also has the finest of service and parts facilities backed by HOUGH field service personnel. See him today.

12-B-6 R

THE FRANK G. HOUGH CO. 12-B-6
Sunnyside Avenue, Libertyville, Ill.
Please send full data on the Model H-30B PAYLOADER

Name
Title
Dept.
Street
City State

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

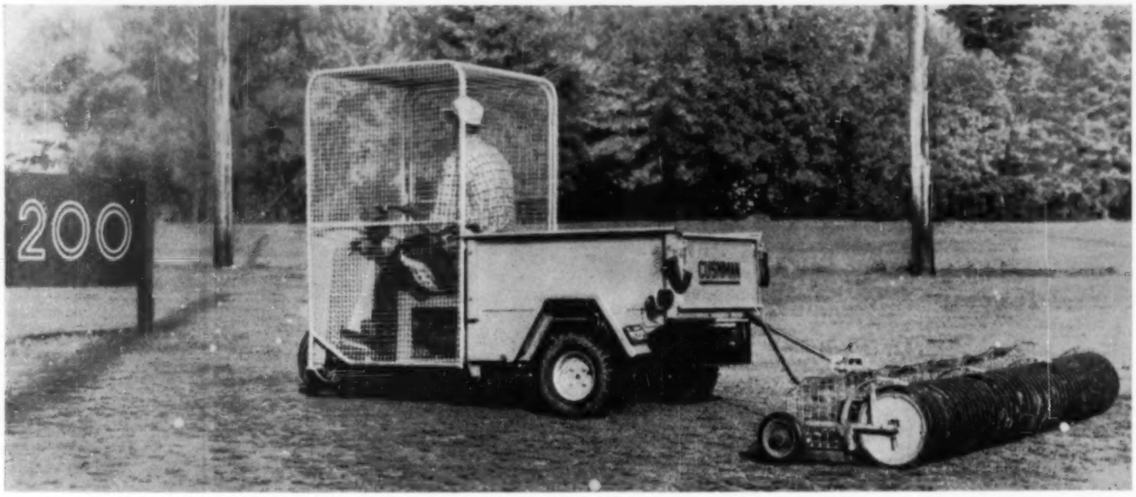
HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

HOUGH®

30
HOUGH
LOADER

PAYLOADER®

Litho in U.S.A.



In Portland, Ore., a wire screen protects the operator from line drives.

Small vehicles aid park departments

Small three-wheeled vehicles find more and varied uses almost daily, particularly for subdivisions of park departments. Wayne McIntyre, general foreman in charge of motor vehicles for the Inglewood (Calif.) Park Cemetery, reports that he is able to get more small jobs done in a day without tying up his heavier trucks.

He uses seven Cushman Trucksters for trimming, checking, mausoleum preparation and landscaping. He believes that these seven vehicles, comprising 26% of his entire fleet have paid for themselves in time savings alone. Four of the three-wheelers contain gasoline-powered generators which operate electric grass trimmers to cut the grass adjacent to 115,000 memorial tablets. The others serve primarily as transportation for gardeners and grave checkers. The vehicles' light weight prevents damage to the turf when used off the drives.

The municipal driving range at Portland, Ore., is now using a Cushman Truckster model 780 to pick up golf balls. With the addition of a wire screen to protect the operator from a sudden-death line drive and a trailer hitch for hauling a ball-recovery machine, the three-wheeled vehicle numbers this among its other duties. Eleven of these vehicles haul general maintenance materials at the municipal golf course, zoo, and park. ◄◄

Generators make electric-powered trimmers possible in Inglewood, Calif.

Brush chipper pays for itself

In three years, Grand Junction, Colo., has been able to pay for its Asplundh brush chipper in the time that the chipper has saved. Park Director Ralph F. Stocker formerly had to allow his crews six to eight trips each day to the disposal area with cumbersome loads of branches trimmed from the street trees. Now they seldom make more than one daily trip with an efficient load of chips.

In addition, the chips now serve as a mulch to increase the fertility of Grand Junction's park land. The men spend less time spreading the chips than they formerly needed to burn the bulky tree branches.

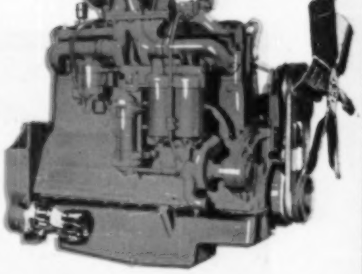
Maintenance is extremely simple. The machine thus far has required no more than keeping the blades sharp. ◄◄

The chipper turns tree limbs into a beneficial mulch.

SICARD INC. Snowmasters

with A-C ALLIS-CHALMERS Diesels develop

Monstrous Appetite for Snow!



Traffic-stopping snow is no serious threat to towns protected by Sicard Snowmasters. They wade into heavy windrows of snow, chew it up and literally pour it into waiting trucks — or throw deep drifts of it high and wide across adjacent fields. Power for this must be chosen carefully, and Sicard's choice is Allis-Chalmers diesels. This is why:

Fast Cold-Weather Starting — Allis-Chalmers "Thousand Series" diesels start directly and immediately on diesel fuel. No separate starting engine, no ether required even in sub-freezing weather.

Power with Economy — Allis-Chalmers' controlled-turbulence, open-combustion system is the most modern in the business, and represents a new high in efficiency. Rated power is *there* — and torque is consistently high. Fuel is *burned*, not wasted, and fuel savings run as much as 27 percent over other comparable diesels.

Outstanding Job Ability — They're readily available for heavy work. The responsiveness and acceleration of Allis-Chalmers "Thousand Series" diesels is exceptional. These Sicards move into heavy snowbanks, diesel lugs down — quickly responds, and snow disappears. Snow removal by Sicard Blowers continues at a fast rate.

This kind of performance has led many manufacturers to standardize on Allis-Chalmers "Thousand Series" diesels. For full information, contact your dealer or . . . Allis-Chalmers, Milwaukee 1, Wisconsin.

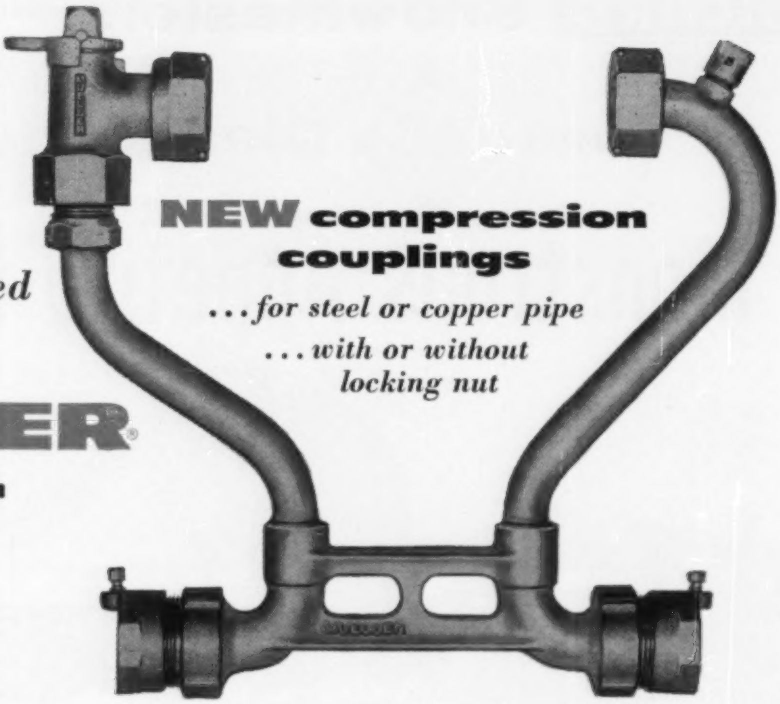
BC-41

TEAMWORK FOR PROGRESS

ALLIS-CHALMERS

quickly installed in old piping!

MUELLER® copper meter yokes



NEW compression couplings

...for steel or copper pipe
...with or without locking nut

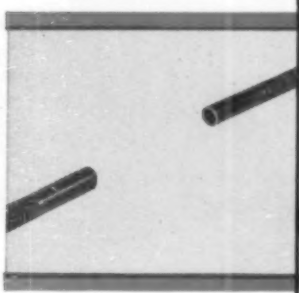
You can now install Mueller Copper Meter Yokes in any existing steel or copper piping in just a few minutes — and without cutting threads or sweating joints.

The simple step-by-step procedure for installing a yoke with Mueller's new Compression Couplings is shown below. Permanent, water-tight joints are quickly made even on rough and badly pitted pipe. Possible trouble is avoided because the piping does not have to be moved.

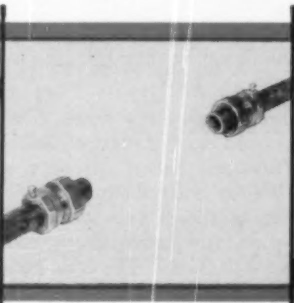
These new, time-saving couplings are now available for all Mueller Copper Meter Yokes with Multi-Purpose Ends. Regular compression nut or locking nut designs can be furnished for steel or copper pipe.

The locking nut type (shown) positively prevents any movement of the yoke on the pipe and insures continuous electrical bonding of the service piping.

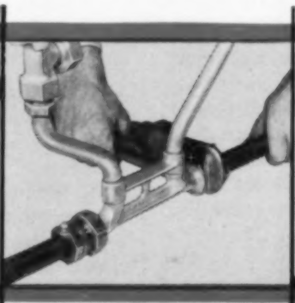
Write for complete information and specifications on Mueller's Copper Meter Yokes.



1 Clean dirt, rust and scale from pipe and cut out a section just slightly longer than yoke (without coupling).



2 Remove all burrs from inside and outside of pipe and slip complete coupling over cleaned ends of pipe.



3 Align yoke between ends of pipe, slide couplings into place and tighten couplings securely onto yoke body.

4 Tighten compression nuts on pipe and lock yoke in place by tightening locking set screw on clamp. Setting complete.

Copper Meter Yokes are just a portion of Mueller's complete line of quality-matched meter setting equipment.

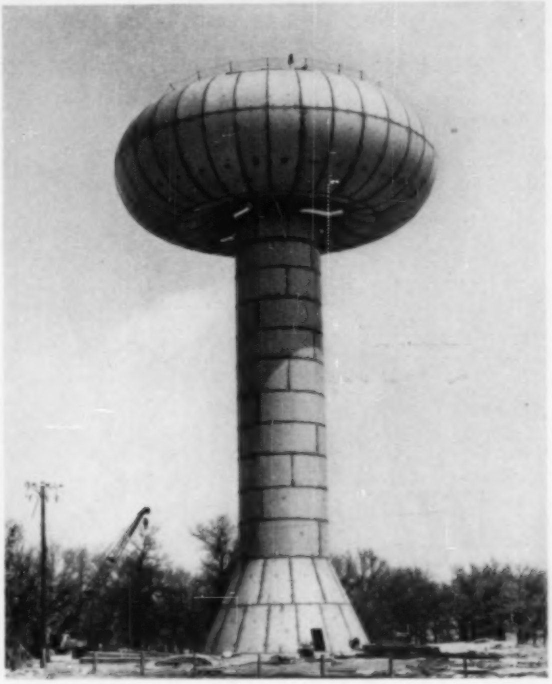
MUELLER CO. since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles;
In Canada: Mueller, Limited, Sarnia, Ontario.

A mushroom "grows" into the sky

The Aquatore provides water storage on top and pumping and office space below.



The new 1,000,000-gallon water tank in Blaine, Minn., resembles a giant mushroom towering 147 feet high. It "grew" in a comparable manner, for the contractor first built the doughnut-shaped tank on the ground, then jacked it up periodically, foot by foot, as his forces constructed the single pedestal which now supports it aloft.

Blaine's water system, now under construction, will serve approximately 12,000 people, with the new $182,000 tank providing storage and pressure. The doughnut-like shape of the new tank, called an Aquatore by the Graver Tank and Manufacturing Co., enables it to provide a head fluctuation much smaller than that of other tanks of similar capacity.

Some pertinent specifications of the new tank follow:

Over-all height	147 feet, 1½ inches
Height to low-water level	109 feet
Diameter of torus	83 feet, 6 inches
Height of torus	38 feet
Diameter of column	22 feet
Diameter of base	42 feet
Height of cone bottom	22 feet, 6 inches
Amount of steel	450 tons

Other advantages that offset the Aquatore's slightly higher cost include painting economy—there are no struts or railings—and the built-in pumphouse and storage space in the base. The access ladder rises from this enclosed storage space. The Blaine Water Department will use one of the three rooms in the large enclosed base for its headquarters.

William R. Dolan
Village Engineer
Blaine, Minn.

116-mgd plant for Montevideo, Uruguay

Montevideo, Uruguay, is building a new water-purification plant which will be able to deliver 116,000,000 gallons a day.

The new plant is the first project to receive United States' assistance following the Alliance for Progress meeting for economic development in Latin America, held last August in Punta del Este, Uruguay. It is being built by Infilco, Inc., a subsidiary of the General American Transportation Corp.

Financing

The $7,500,000 project is being financed through the Export-Import Bank of Washington, a United States Government agency, and the Inter-American Development Bank.

Funds authorized by the Export-Import Bank of Washington include a loan of $1,900,000 to the government of Uruguay for the purchase of filter equipment and controls plus storing and feeding equipment for chemicals.

Supplementing this is a loan of approximately $5,500,000 by the Inter-American Development Bank for the purchase of materials locally and for fabrication, erection costs and services.

The total project will include canals from the Santa Lucia River (the water source), a pumping station and the installation of distribution lines to Montevideo.

The treatment plant will include four Infilco "Accelator" treating units which will remove impurities in the water by chemical treatment and coagulation. Also included are 20 gravity filters, control system, valves and interconnecting piping.

The new plant is scheduled for completion within 31 months. It will be the largest high-rate water-treatment plant in South America and one of the largest plants of its kind in the world.

Infilco will have full responsibility for its design and erection and the training of local personnel to operate the plant. During its first year of operation, it will be supervised by Infilco personnel.

The signing of the contract between Infilco and Obras Sanitarias del Estado de Uruguay, brought to completion more than two years of planning on the international level. ◄◄

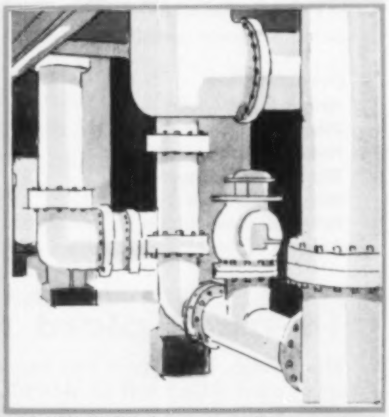
PIPE FACTS

In a recent survey, ten times as many contractors claimed more difficulty (breakage during installation) with composition pipe than with cast iron pipe.

CITY W
STEM
DET

DO YOU KNOW that where electrical thawing of mains and services is necessary, AMERICAN Fastite pipe can be installed with a specially designed and patented conductive gasket? This remains effective regardless of expansion, contraction or future movement of the joint.

DO YOU KNOW that the cost of replacing or repairing a broken pipe line can amount to many times the original cost of the pipe? Inconvenience to residents and merchants can also be costly. Initial pipe costs don't tell the whole story. Why gamble? Install time-tested cast iron pipe with "built-in" safety factors.



DO YOU KNOW that over a million pounds of AMERICAN pipe and fittings in the modern sewage treatment plant at South Bend, Indiana, helped this city to solve a serious river pollution problem? AMERICAN offers a complete line of piping to meet water, sewage treatment and industrial plant service.

◀ DO YOU KNOW that every $4.50 invested in Otis Elevator stock in 1932 would now be worth approximately $89.00? Another sure long-term investment is dependable cast iron pipe. Utilities in 96 cities throughout the United States have cast iron pipe mains which have been in service for more than 100 years.

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM ALABAMA

This movie stars a commission

The film gives a comprehensive view of the district's activities.

Featured in a new movie about sewage treatment and collection are the members of the Washington (D. C.) Suburban Sanitary Commission and Chief Engineer Robert J. McLeod. The purpose of this film is to create public understanding of the tremendous system expansion which will be necessary to meet the requirements of an area population expected to top 2,000,000 in the next 40 years.

For more than half of the 20-minute running time, the commissioners and the engineer tell their own story instead of letting a professional narrator perform this task. The personal approach aims at emphasizing vitality and sincerity.

The film features the history of the system, the operation of facilities and maintenance procedures. These include the radio-controlled fleet of maintenance crews and the money-saving closed-circuit television cameras for sewer inspection.

"Investment with a Future," the title of the color movie provides an indication of the contents for the civic, business, service and school organizations which may wish to employ it. The Commission distributed "Priceless Water," a similar film about water supply and distribution, last year with the cooperation of the American Water Works Association. Together, the two films supply a comprehensive program a half hour in length for those organizations in the 475-mile service area which wish to take advantage of the package. ◄◄

Six-year $46,000,000 sewerage program

Last April 4th the Los Angeles voters gave the "go-ahead" sign to what probably is the largest sewerage relief program in the city's history, by approving a $46,000,000 sewer bond issue. The program contemplates the construction of relief sewers, additions, extensions, replacements and improvements to existing sewerage facilities, and odor-control facilities, all designed to meet the city's requirements through 1966, and supplementing the $60,000,000 expansion, extension and modification program financed by a 1955 bond issue and now in its final stage.

Relief Sewers

Largest item of the program is the expenditure of $31,250,000 for relief sewers. They will provide relief in the areas with currently overloaded sewers, particularly those of expanding heavy commercial, residential or industrial areas.

Basic reasons for the urgent need of such a large sewer relief program include:

- **The unprecedented continuous increase in population and industry.**
- **The high rate of development of previously undeveloped land.**
- **The urban-redevelopment program.**
- **Construction of unlimited height buildings, especially in areas where only one- or two-story buildings existed.**
- **Continuous rezoning upward of undeveloped lands.**
- **The increase in size of the city by annexations.**

Since the program covers the entire city, it entails numerous projects, the designs of which are just being started. Thus, little information is presently available regarding linear feet of sewer and diameters to be used. In keeping with the policy of the Board of Public Works, we will specify clay pipe in all sizes available (presently up to 42-inch bell and spigot pipe) and lined reinforced concrete pipe for all sizes greater than 42 inches.

The program also includes a $300,000 expenditure for a two- to three-year comprehensive study of the sewerage system to delineate the city's requirements in the face of anticipated growth to the year 2000.

To date, Los Angeles has approved sewer bond issues totalling $171,231,500 and these do not include local sewers financed by property owners benefited either by assessment proceedings or permit. The present city sanitary-sewer system contains 4,896 miles of pipe ranging in size from six inches to 12 feet in diameter.

LYALL A. PARDEE
City Engineer
Los Angeles, Calif.

Letters To the Editor

Hotfoot for Bugs

We have been amazed to learn how wide your readership is, and how great is their interest.

Mayor Hubbard is still receiving correspondence about the story in the July issue ("Electronic Hotfoot Eliminates Bugs," p. 103). One came from the regional planning officer of Northern Rhodesia. All wanted the supplier, which we forwarded promptly.

ALEX PILCH, *Director*
Research and Information
Dearborn, Mich.

EDITOR'S NOTE: The supplier is Gardner International Corp., P. O. Box 2717, Hamilton Station, Pompano Beach, Fla.

Harry R. Betters

Harry Raymond Betters, executive director of the United States Conference of Mayors, passed away on October 11th following a brief illness. He was 53 years old.

Mr. Betters had been on the staff of the Conference of Mayors for 24 years, having joined the Conference in 1937. He became its executive director in 1954. ◄◄

Foundation Announces City-Planning and Urban-Renewal Fellowships

The Sears-Roebuck Foundation is accepting applications for the sixth series of graduate fellowships in city planning and urban renewal.

The foundation will award a minimum of ten grants to candidates for a master's degree in city planning or its equivalent. The maximum grant is $3,000 annually. The grant may be renewed for a second year.

Candidates can submit applications until March 1, 1962; the foundation will notify recipients on or about March 15.

This year's selection committee is composed of Robert Calkins, president, Brookings Institute; Martin Meyerson, vice-president, American Council to Improve Our Neighborhoods; and Dennis O'Harrow, executive director, American Society of Planning Officials.

Further information may be obtained by writing: The Sears-Roebuck Foundation, City Planning Fellowship Program, 3333 Arthington St., Chicago 7, Ill. ◄◄

What Cities Are Doing About Air Pollution

Industry, County Cooperate

Cooperation between industry and government in the fight against air pollution in Lake County, Ohio, has been started with the establishment of an industry advisory committee, which is working with the Lake County Health Department. According to Dr. Benjamin S. Park, Health Commissioner, he will turn to the committee "in the event that cooperation on the part of an industrial organization to control health hazards or nuisances has not been obtained."

Russia's Air Pollution

The fifth volume in a continuing survey of Russian literature on air pollution and related occupational diseases, being conducted by Dr. Ben S. Levine, under a United States Public Health Service research grant, is now available through the Office of Technical Services, Business and Defense Services Administration, United States Department of Commerce, Washington 25, D. C. Dr. Levine's latest survey of Soviet literature dealing with the air-pollution aspects of industrial and public health problems contains translations of 45 articles in six sections covering studies on limits of allowable concentrations; pharmacological, toxicological and clinical data; industrial sanitation; ionization and ultraviolet radiation; benzpyrene; analytical techniques for measuring various pollutants.

Sampling Stations

A year-long comprehensive study of air-pollution problems in Niagara County, New York, has been started by the New York State Air Pollution Control Board. About 20 sampling stations have been put into operation throughout the county, which includes the City of Niagara Falls. The purpose of the survey is to gather information to analyze the problem and to supply pollution facts to government officials and to the general public which will form the basis for future action in the fight for cleaner air.

Lansing Officials

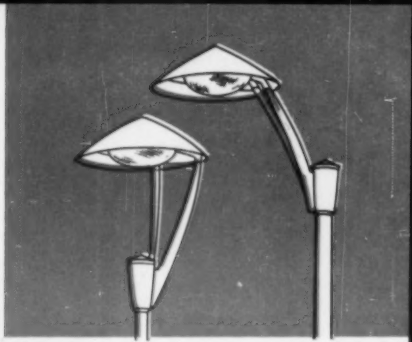
Marvin S. Ray has been named Chairman of the Air Pollution Commission in Lansing, Mich. Other new officers are Bernard Ansley, Vice-Chairman, and Catherine Badell, Secretary. Charles Pesterfield continues as the air-pollution engineer.

Organize Warning System

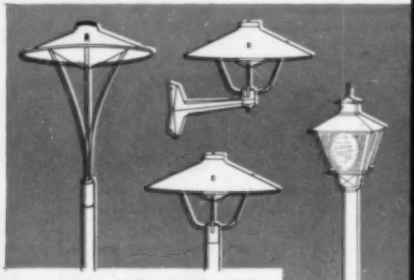
The Metropolitan Regional Council, an organization of municipal officials from New York, New Jersey and Connecticut, has approved the establishment of an air-pollution warning system for the New York City Metropolitan Area. The Council's air-pollution committee will hold conferences with the officials concerned with air pollution in the region, for the purpose of sponsoring an educational campaign for industry and the public to explain the need for the system. A technical committee, comprised of members of the New York-New Jersey Cooperative Committee on Interstate Air Pollution and the Council's air-pollution committee, has been charged with the formulation of the mechanics of the air-pollution warning system and technical assistance will be sought from the United States Public Health Service. The New York-New Jersey Cooperative Committee is composed of the New York City Department of Air Pollution Control, the New York State Air Pollution Control Board, the New Jersey Air Pollution Control Commission and the New Jersey State Department of Health.

—Prepared by Kenneth Kowald

L-M PTL'S AT HOLIDAY INN MOTEL, Springfield, Missouri. PTL luminaires are weatherproof, in brushed aluminum or choice of six decorator colors. Exceptionally easy to install. Top reflector simply tilts for maintenance or relamping. With or without photocontrol, for incandescent or mercury with built-in ballast. Choice of seven IES light patterns.



L-M'S STYLED MERCURY, the ultimate in styling for streets, parking areas, malls, shopping centers, etc. Available in 1000, 700 or 400 watt luminaires.



L-M LAWN-GLO LUMINAIRE available in traditional or three contemporary designs. For homes and commercial applications where soft, low-level lighting is desired. High grade, all-aluminum unit with many desirable features; weatherproof; easily installed.

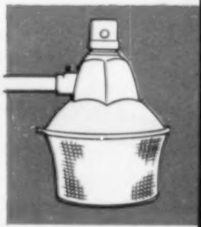
Increase Nighttime Traffic With L-M's Modern, Efficient PTL(TM) Luminaire

Contemporary styling and high lighting efficiency are combined in L-M's Post Top Light. The PTL luminaire has a scientifically designed optical system, with reflector-refractor combination that directs light down, not up and out where it is annoying.

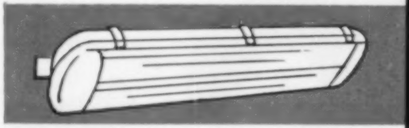
PTL'S can be installed anywhere; replace old-style units, or provide efficient lighting for new installations. Excellent for public and private applications for hotels, motels, pools, parks, marinas, driveways, amusement parks, shopping centers, churches, hospitals, and airports, because it directs the light down, not up.

Get Information on L-M Outdoor Lighting

L-M equipment is specifically designed for the application. L-M provides a complete line of luminaires, in a wide variety of types, in fluorescent, mercury, and incandescent. Also Lighting Application Engineering Service, available through Authorized L-M Distributors. Ask your electrical wholesaler, or mail the coupon.



L-M SUBURBANAIRE is available in mercury or incandescent. For farms, neighborhood streets, church grounds, parking lots, many other areas where medium-intensity efficient lighting is desirable.



L-M FLUORESCENT LUMINAIRES are available in a wide variety of styles for street, airport, subway and tunnel lighting. In choice of deep or shallow units.

LINE MATERIAL® Industries

McGRAW-EDISON COMPANY

533

Outdoor Lighting

McGRAW EDISON

DISTRIBUTION TRANSFORMERS · RECLOSERS, SECTIONALIZERS AND OIL SWITCHES · FUSE CUTOUTS AND FUSE LINKS
LIGHTNING ARRESTERS · POWER SWITCHING EQUIPMENT · PACKAGED SUBSTATIONS · CAPACITORS · REGULATORS
OUTDOOR LIGHTING · LINE CONSTRUCTION MATERIALS · PORCELAIN INSULATORS · FIBRE PIPE AND CONDUIT

MAIL THIS COUPON

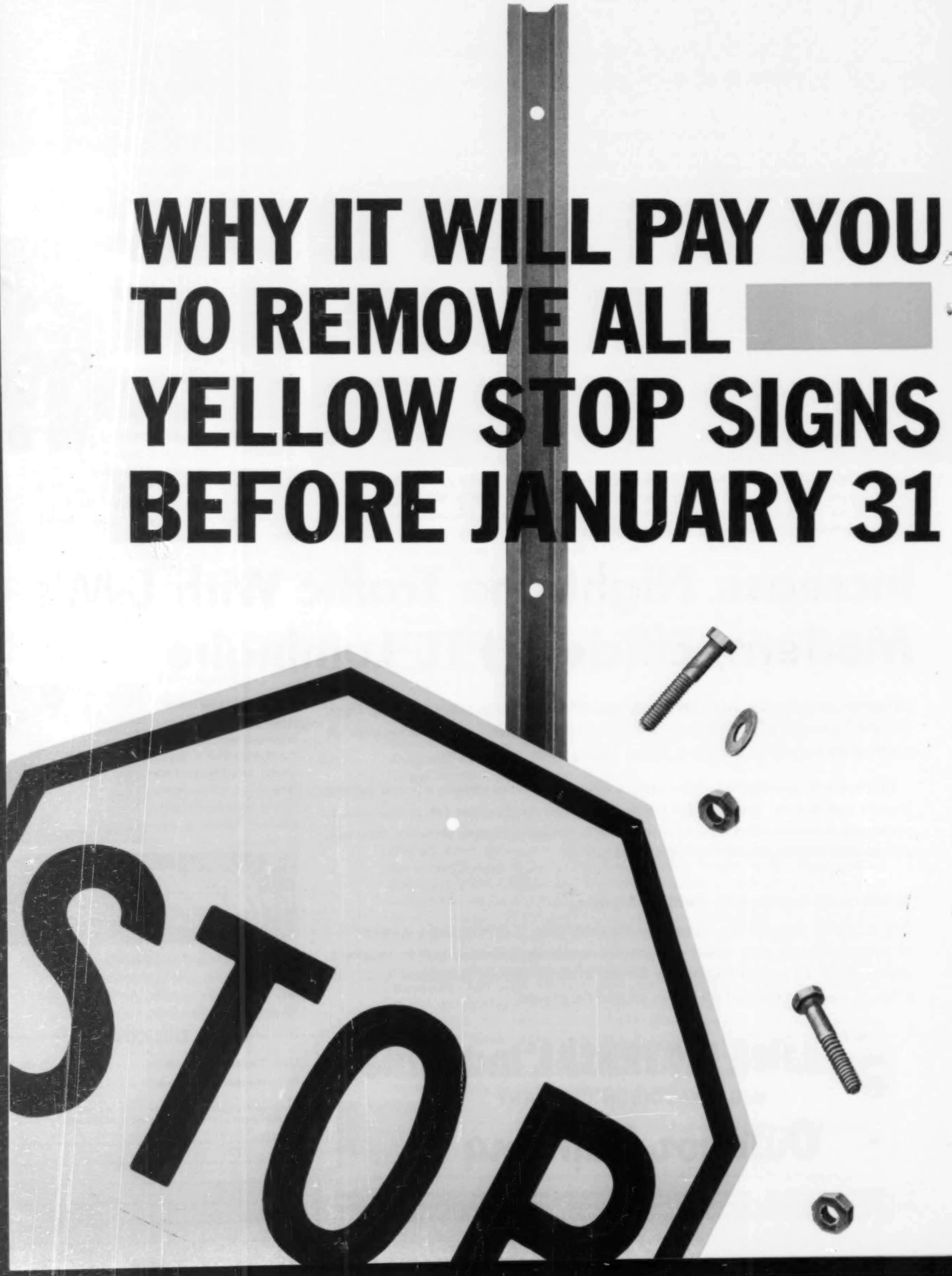
Line Material Industries,
Milwaukee 1, Wisconsin

AC-121

Please send me information on the PTL, L-M's complete lighting line, and name of nearest Authorized L-M Distributor.

Name____________________
Company____________________
Address____________________
City____________ State________
Type of Business____________________

WHY IT WILL PAY YOU TO REMOVE ALL YELLOW STOP SIGNS BEFORE JANUARY 31



To all cities and counties that desire to bring their Stop signs completely up to standard, we make this special offer:

Now is the time to clear up the confusion. Complete the change to the one and only standard, red (or the new standard Yield sign where warranted) with sign faces of "Scotchlite" Reflective Sheeting. You get the finest full-time, all-weather signing you've ever seen. You save money from the start!

For a limited time, we are offering special packages of prescreened Stop and Yield sign faces at reduced prices.

But that's not all. The purchase of a package entitles you to still another price reduction—this time on the "Scotchlite" Applicator Machine of your choice. One of these machines is your key to making and maintaining the highest quality reflective signs at the lowest cost. Your old sign blanks can be used over and over, saving tax dollars for years to come.

So, don't stop short. It really pays to complete your standardization now with "Scotchlite" Reflective Sheeting. Mail the coupon for full details. This offer is limited to cities and counties in the United States, and expires January 31, 1962.

Scotchlite®
BRAND
REFLECTIVE SHEETING

Minnesota Mining and Manufacturing Co.,
Dept. RBK-121, St. Paul 6, Minn.
I want to know all about your STANDARDIZE AND SAVE offer. Without obligation, please have your representative call.

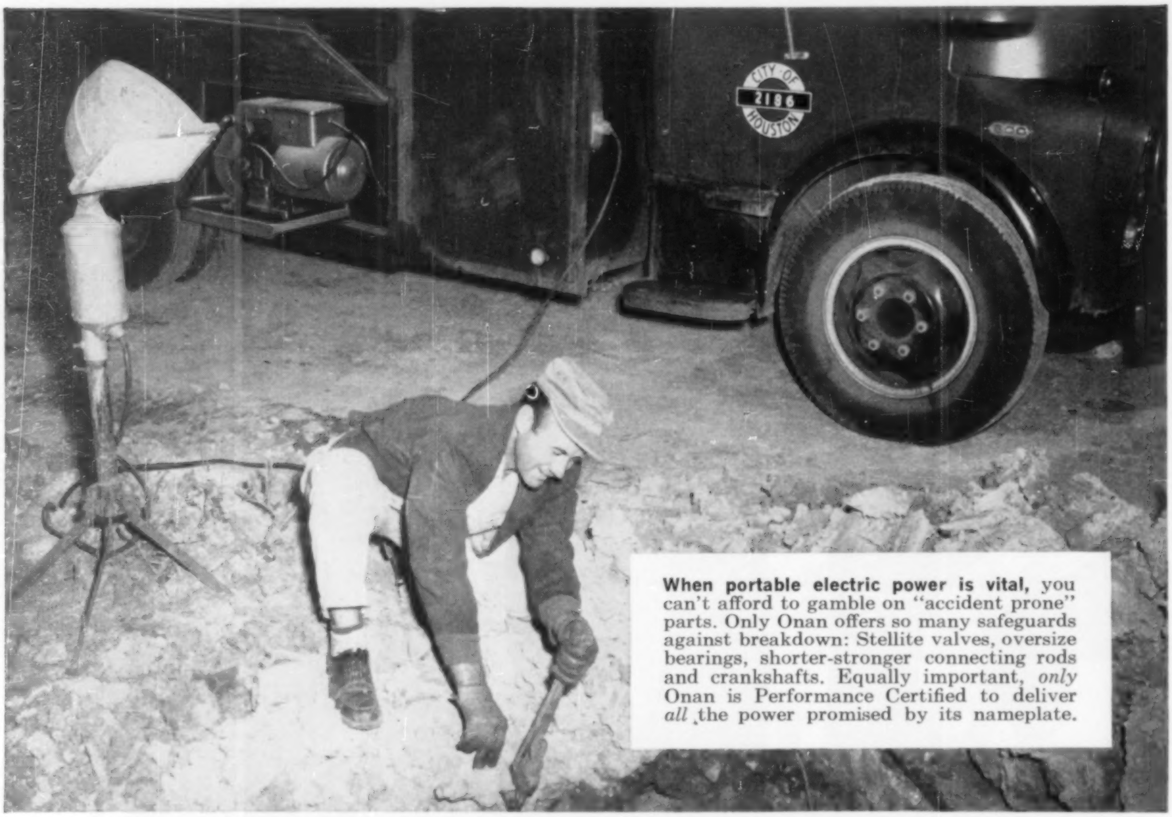
Name____________________

Title____________________

Address____________________

City____________ **State**________

Reflective Products Division 3M COMPANY



When portable electric power is vital, you can't afford to gamble on "accident prone" parts. Only Onan offers so many safeguards against breakdown: Stellite valves, oversize bearings, shorter-stronger connecting rods and crankshafts. Equally important, *only* Onan is Performance Certified to deliver *all* the power promised by its nameplate.

Only Onan is certified to give you all the power promised by its nameplate

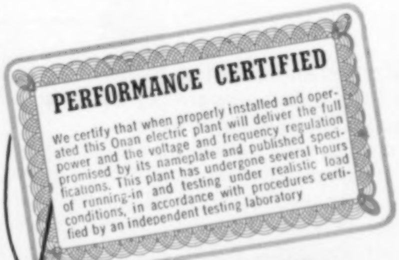
It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that short-changes you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.



PERFORMANCE CERTIFIED

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory

World's Leading Builder of Electric Power Plants

Onan

ONAN Division, Studebaker-Packard Corporation, 2625 University Ave. S. E., Minneapolis 14, Minn.

PUBLIC SAFETY

Portland's latest fire defense, 750-gpm engines for residential districts.

Portland's cab-forward fire trucks

Three more cab-forward pumping engines acquired by Portland, Ore., bring Portland's Seagrave fleet to seven cab-forward 1,250-gpm pumping engines, three cab-forward 750-gpm pumpers, four cab-forward 85-foot four-wheel aerial ladder units, and two cab-forward tractor trailer 100-foot aerial ladders.

These three latest additions are for service in a part of the residential and outlying section of Portland. Therefore, they differ considerably from the seven 1,250-gpm engines in the high-property-value district. They are Seagrave cab-forward style 750-gpm pumpers powered by the Hall-Scott 590-cubic-inch engine. The booster tanks are larger with 500-gallon capacity and smaller pumps; different hose bodies, with two electric booster reels, and four 1½-inch preconnects are used. A single-stage booster pump, driven from the power take-off of the transmission, provides additional capabilities for fighting running brush fires. The units, designed for operating in snow, are equipped with no-spin differentials, electric sanders, and Bendix power steering. Alternators and transformers for floodlights are part of the electrical system. ◄◄

Warning signals

Every Friday at 12 noon, three ten-second blasts test the 25 new Gamewell sirens which cover Waltham, Mass. If necessary the civil-defense attack warning signal will be sounded in accordance with civil-defense regulations. Here are (l. to r.) the officials responsible for the signal system: Col. Harold P. MacLeod, sector representative, Massachusetts CD; Arthur J. Clark, CD director, Waltham; Mayor Austin D. Rhodes and Edward W. Burton, inspector of wires, Waltham. ◄◄

Seattle's plastic police boat

The Seattle, Wash., Harbor Police department has put into operation their first large reinforced-plastic police patrol boat. The 40-foot fiberglass hull made of Hetron resin was fabricated by the West Coast Marine Co. of Seattle, which also built the prefabricated plywood cabin which is covered by a reinforced Hetron plastic skin, as are all the exterior surfaces.

The fire resistance of glass-reinforced Hetron polyester resin, made by the Hooker Chemical Corp., Niagara Falls, N. Y., will be of advantage when the patrol boat ventures close to fires. Although not primarily a fire boat, the vessel can supplement the fire department's craft since it contains a pumping station; a water monitor with a 3-inch brass nozzle protrudes from the cabin top. The new boat is powered by two 6-71 GMC diesel engines. Seattle's half dozen large police craft patrol some 200 miles of waterfront. ◄◄

HARBOR POLICE

Seattle's first plastic police boat has a fiberglass hull.

THE MODERN INCINERATOR RATES A DETROIT STOKER

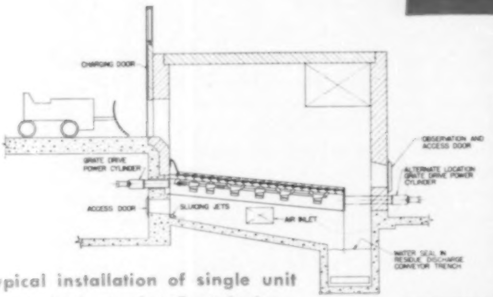
The Winchester, Ky. Municipal Incinerator plant although of small capacity compared to the requirements of many larger cities is nevertheless completely modern.

Among the modern features of this plant, the DETROIT RECIPROCATING GRATE INCINERATOR STOKERS stand out.

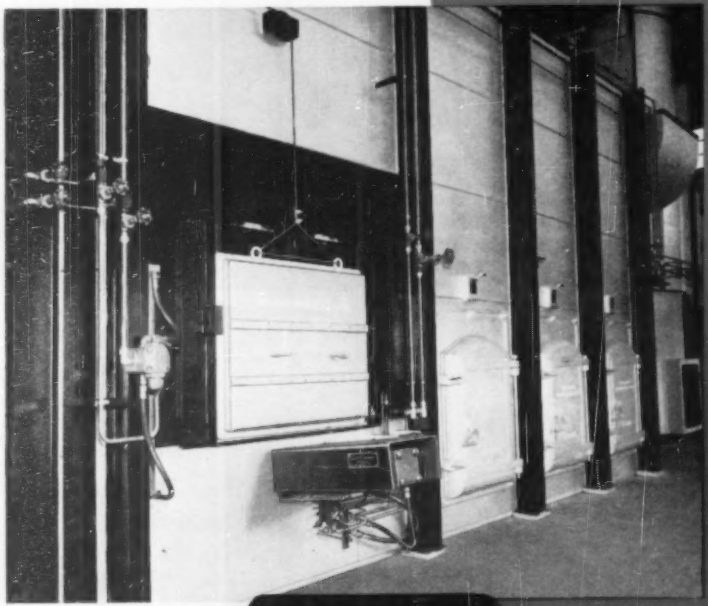
Employing reciprocating grate action to continuously convey refuse from the charging end of the furnace through the active burning area to the point of ash residue discharge, the Detroit Reciprocating Grate Incinerator Stoker tumbles and tears the refuse mass for more active and complete burning, all without manual poking.

The automatic operation of the stokers has contributed substantially to the saving in operating labor enjoyed at this facility.

The two fifty ton per day incinerators in the plant provide ample capacity for the needs of this community with plenty of reserve for future population growth.


CHARGING DOOR
OBSERVATION AND ACCESS DOOR
GRATE DRIVE POWER CYLINDER
ALTERNATE LOCATION GRATE DRIVE POWER CYLINDER
ACCESS DOOR
SLUICING JETS
AIR INLET
WATER SEAL IN RESIDUE DISCHARGE CONVEYOR TRENCH

Typical installation of single unit Detroit Reciprocating Grate Incinerator Stoker for the small city plant.



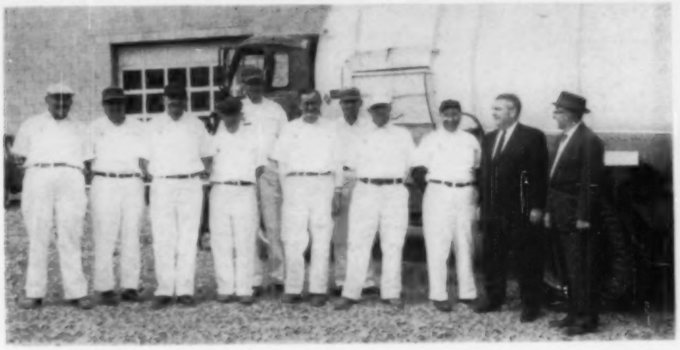
Front End of Incinerator, illustrating simplicity of stoker drive.

DETROIT
SINCE 1898
STOKERS

DETROIT STOKER COMPANY
DIVISION OF UNITED INDUSTRIAL CORPORATION
MAIN OFFICE AND WORKS • MONROE, MICHIGAN

DISTRICT OFFICES
OR REPRESENTATIVES IN PRINCIPAL CITIES

White uniforms for sanitation and safety



Trenton's white-uniformed refuse crew lines up with Public Safety Director W. J. Waldron and the author (far right).

Trenton, N. J., recently put the employees of the Sanitation Department in white uniforms.

The use of such uniforms by the painters of the Traffic Bureau, white caps and gloves by traffic police, and yellow boots and raingear by the sanitation workers, has shown such gratifying results as safety factors that the Board of Commissioners is convinced that white and yellow uniforms pay off in safety for city employees.

Since the sanitation crews started wearing their white uniforms, the men have reported the cautious attitude that motorists have taken. The effect will be more apparent in the winter months when the men are working after sundown.

Another good feature is that the uniforms carry the last name of the employee, sewn over the left pocket, providing identification to the public. The right pocket has the seal of the city in blue and yellow.

A contractor, Standard Uniform Rental Service of Trenton, N. J., with home offices in Irvington, N. J., supplies the uniforms, providing two changes of shirts and slacks a week for summer wear and two changes a week of coveralls to be worn over clothing for winter.

The rental service includes the uniform, bank-type locker drawers, laundry service and repairs. The supplier is a member of the Institute of Industrial Launderers, Washington, D. C., which represents nationally those offering this type of service.

The contractor has full responsibility for complaints and adjustments. An employee having a complaint leaves a note in his locker drawer and receives satisfactory and immediate adjustment.

Under the terms of the agreement, the supplier provides pick-up and delivery service; complete cleaning, repairing, pressing and maintenance of garments; replacement of garments where necessary; fitting each man personally to his uniform and embroidering his name on it so that he alone wears it; uniformity of appearance; health protection since garments are sanitized when washed; safety protection (no loose-fitting garments or flapping cuffs).

BAYARD L. SHAW
Superintendent of Refuse Collection

Miami makes "crash" trash pick-up drive

A Bucyrus-Erie Hydrocrane machine on a Chevrolet chassis transfers rubbish to a large trash truck.

HELP KEEP MIAMI CLEAN

Miami, Fla., recently gave its residents a chance to get rid of all types of rubbish not included in the regular waste-disposal program. The three successive weekly pick-ups initiated by City Manager M. L. Reese, constituted the first Operation Cleanup conducted in Miami in 20 years.

Four city divisions cooperated in the catch-all rubbish drive, under the direction of J. Grady Phelps, waste division superintendent. Other participants included the streets and parks employees and police.

Eighteen cranes with clamshell buckets designed for picking up yard rubbish, 80 trucks and 200 employees took part in the program. Items collected included old stoves, water heaters, washing machines and stacks of venetian blinds. Mounds of newspapers also appeared, some dating back to 1930. One woman had been getting rid of a huge rug by cutting it into pieces and placing them in the rubbish piecemeal. She unloaded the remainder in the big rubbish-collection drive.

The drive netted about 1,515 truckloads totaling 4,714 tons. Collections took place in a 34-square-mile area involving about 90,000 pieces of property. Miami is now considering a semi-annual program to tie-in with the national "clean-up, paint-up drive" in spring, as well as a clean-up just before the winter season. ◄◄

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 53.

5-Phase Traffic Controller

101 Latest product literature from CROUSE-HINDS, SYRACUSE, N. Y., details the LTD-510, a new 5-phase multiple lane, dual left turn traffic controller that apportions right-of-way to those phases needing it, when needed and for as long as it's needed, in the absence of demand from other phases.

Packaged Water Purification Units

102 Available to handle flows from 300 to 6,000 gallons per hour, Rotoflow water purification plants help solve water problems due to color, iron, turbidity, manganese, taste, hardness. Literature from NORTHWEST FILTER CO., 528 S. HOLDEN, SEATTLE 8, WASH., gives details.

Rids Streets of Snow

103 Snowblowers large and small, ranging in size from detachable tractor-mounted units to a mighty, powerful Snowmaster are reported on in detail in the current catalog offered by SICARD INDUSTRIES, INC., 753 W. MAIN ST., WATERTOWN, N. Y.

Lamps for Municipal Lighting

104 Fluorescent, incandescent, mercury vapor, infra-red—make up a complete line of cost-saving, long-lasting lamps for municipal, commercial and industrial outdoor and indoor applications. For details, write BILL FERRIS, CHAMPION LAMPS, LYNNWAY, LYNN, MASS.

Heavy-Duty Engines

105 . . . designed to meet the most exacting requirements of municipalities—in electric power generation, for pumping systems, and sewage plant power—are subject of literature available from ENTERPRISE ENGINES, 550 85TH AVE., OAKLAND 21, CALIF. Models are 73 to 7703-hp. with fueling in diesel, dual fuel, tri-fuel or spark-ignited gas.

Drive Up, Hitch Up

106 Save time, work and money, says a new bulletin describing a quick-snap coupling for snow plows, which enables you to drive up to any plow, hitch plow and truck in seconds, and get under way without ever leaving cab. Write KASTEN MFG. CORP., ALLENTON, WIS.

Rambler for 1962

107 Product literature on the Rambler for 1962 reports numerous improvements that should add up to reduced fleet operating costs and maintenance, plus low initial cost in a wide range of models. Write FLEET SALES DEPT., AMERICAN MOTORS CORP., 14250 PLYMOUTH RD., DETROIT 32, MICH.

Smoke Out Sewage Line Leaks

108 A new smoke-bomb technique detects common leaks from poor joints, poorly constructed manholes, breaks, uncapped abandoned lines and roof drains illegally connected to sanitary sewers. For complete information, write SUPERIOR SIGNAL CO., INC., P. O. BOX 700, SPOTSWOOD, N. J.

Fleet Buyer's Guide

109 This valuable 12-page booklet gives the car facts and figures for 1962 that will enable you to select the car best suited to your municipal fleet operation and arrive at a fleet purchase tailored to your exact requirements and best interests. Write FORD MOTOR CO., DETROIT, MICH.

More Revenue from Parking

110 This booklet precisely and succinctly depicts equipment that will help you protect revenue, eliminate guesswork from traffic control, and provide compatible systems for automated parking. It's available from GLOBE TICKET CO., 112 N. 12TH ST., PHILADELPHIA 7, PA.

Trench, Load, Landscape

111 It takes a mighty 50-hp wheel loader to move fast from job to job and pay benefits on each. The big "2010" heavy-duty loader and matched equipment is such a machine. For detailed specifications, write JOHN DEERE, 3300 RIVER DRIVE, MOLINE, ILL.

Sewer and Pipe Cleaning Equipment

112 A compact emergency kit for opening sewer stoppages and removing roots, equipment for sewer and conduit maintenance, drag tools, self-propelling nozzles, sectional sewer rods, etc., can be found in the latest catalog from W. H. STEWART, INC., 202 KRATZ AVE., SYRACUSE, N. Y.

Emergency Lighting

113 Warning lights, handlights, vehicle lights, panic lights—over 100 lights make up the complement of powerful, dependable, durable emergency lights in the product line of CARPENTER MFG. CO., 655 BRADLEY ST., SOMERVILLE 45, MASS. Write for catalog guide.

Standardize and Save

114 Cities and counties that desire to standardize their Stop signs with all-weather sign faces of "Scotchlite" Reflective Sheeting, will want to investigate a special, cost-saving, limited offer (expires Jan. 31, 1962) being made by MINNESOTA MINING AND MANUFACTURING CO., DEPT. RBK-121, ST. PAUL 6, MINN.

Cement's Role in Municipal Water Facilities

115 City engineers, planners and builders who desire up-to-date information on the newest uses of portland-cement concrete for modern water facilities can obtain full facts from their local PORTLAND CEMENT ASSOCIATION office.

Waste Treatment Equipment

116 Products included in the P.F.T. line of sewage and sewage treatment equipment include floating cover digesters, supernatant selectors and gauges, sludge gas control equipment, aeration equipment, rotary distributors, etc. For details and bulletins, write PACIFIC FLUSH TANK CO., 4241 RAVENSWOOD AVE., CHICAGO 13, ILL.

Eliminate Water Hammer

117 Subject of latest literature available from PULSATION CONTROLS CORP., P. O. BOX 169, SANTA PAULA, CALIF., is a spherical Shock Trap for water lines. It eliminates water hammer and pipeline bursting, saves piping and plant costs with guaranteed surge limits.

Melts Snow Down the Drain

118 High-capacity mobile snow melters that speed snow removal from streets, parking lots and airports, undergo review in terms of economy, efficiency, safety, procedure in current literature offered by PEABODY ENGINEERING CORP., 232 MADISON AVE., NEW YORK 16, N. Y.

Attention: Municipal Fleet Owner!

119 *Form* #400-G should be *must* reading for every municipal fleet owner. It gives straight-from-the-shoulder facts about the costliness to maintenance of both engine and drive units resulting from unbalanced clutches. Available from LIPE-ROLLWAY CORP., 806 EMERSON AVE., SYRACUSE 1, N. Y.

Lightweight Hauling Vehicle

120 When it comes to light hauling around the golf course, in public parks, at cemeteries, and at a host of other municipal locations, the Workmaster proves itself to be an all-work, no-play vehicle. For literature, write TORO MFG. CO., 3042 SNELLING AVE., MINNEAPOLIS, MINN.

New Lighting Pole Catalog

121 THE UNION METAL MFG. CO., CANTON 5, OHIO, announces publication of *Catalog* No. 100-B, "Street & Highway Lighting Poles and Brackets," and *Catalog* No. 100-C, "Floodlighting and Area Lighting Poles," both in steel and aluminum, for sportsfields, playgrounds, parking lots, etc.

Lick Dewatering Problems

122 *Catalog* PT-1 gives facts on Posi-Jector nonclogging, self-priming centrifugal pumps that pass and positively eject trash and are ideal for all dewatering jobs. Capacities are 20,000 and 46,000 gph; sizes 3-inch and 4-inch. Write THE JAEGER MACHINE CO., 505 DUBLIN AVE., COLUMBUS 16, OHIO.

Refuse Collection Barrels

123 These plastic barrels have been designed and molded specifically for refuse collection. They're tough, lightweight, and have 55-gallon capacity. Full details available from COUNTY PLASTICS CORP., 1235 N.E., BRIDGE ROAD, BELLMORE, N. Y.

Underground Boring Machine

124 This is a compact unit designed for underground installation of pipe and conduit. A 4-page bulletin includes operating instructions, installation procedure for installing pipe or conduit, and some facts about boring bits. Write EARTHWORM BORING MACHINE, INC., P. O. BOX 1100, SANTA MONICA, CALIF.

(See page 44 for more Bulletins)

Behind the fire fighters...water wells by Layne

Municipal water requirements are as varied as they are vital. The reliability of a water source is foremost when human lives and happiness are at stake.

For over 75 years, Layne & Bowler, Inc. and its associate companies have pioneered and specialized in the development of ground water. Their only concern—their only business is water.

Layne water wells and pumps circle the globe. Various conditions and problems have been met and solved. This know-how, acquired during three quarters of a century of experience, results in efficient, economical wells—the basis of most municipal water systems. Layne wells provide the good beginning.

LAYNE & BOWLER, INC. MEMPHIS
General Offices and Factory — Memphis 8, Tenn.
Layne Associate Companies Throughout The World

Layne

Water Wells • Vertical Turbine Pumps • Water Treatment

TO: LAYNE & BOWLER, INC.
MEMPHIS 8, TENN.

Gentlemen: Please send me bulletin No. 27.

*Name*__________

*Title*__________

*Organization*__________

____

*Address*__________

*City*__________

*State*__________

"It puts together mighty easy Lucy... shecks... you ain't put together too bad yourself"
P. WEBB

U.S. cast iron PIPE

FOR WATER, SEWERAGE AND

TYTON®

ONLY FOUR SIMPLE ACTIONS

a honey to handle

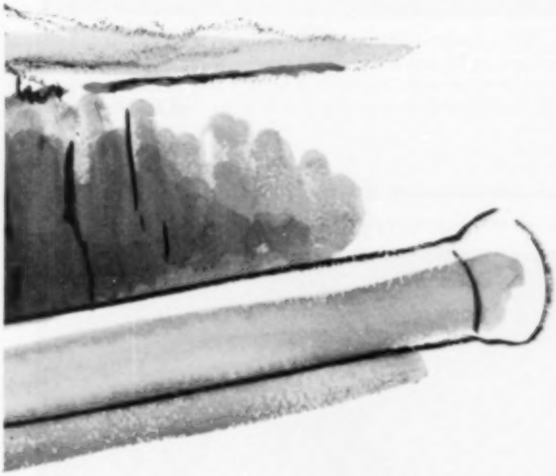
Tyton Joint® pipe, naturally . . .

This rugged dependable pipe goes together so easily even green crews become experts quickly. Consider:

Only one accessory needed—a rubber gasket.
No nuts, bolts, bell holes, caulking equipment. And Tyton can be laid in rain or wet trench when necessary.

High installation costs crowding your budget?
Get the time-and-money-saving facts on Tyton Joint* pipe today. Call or write:

*U. S. Patent No. 2,953,398 •

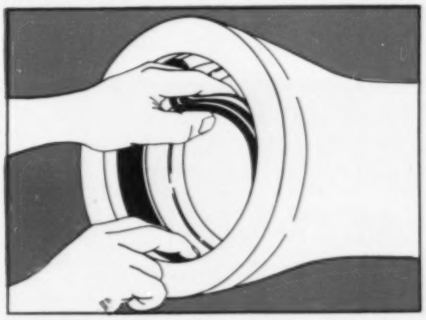


U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

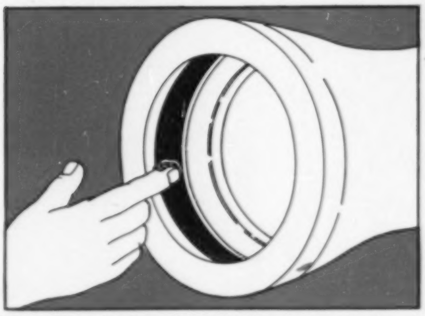
A Wholly Integrated Producer from Mines
and Blast Furnaces to Finished Pipe.

Makers of USIFLEX® Boltless Flexible Joint Pipe.

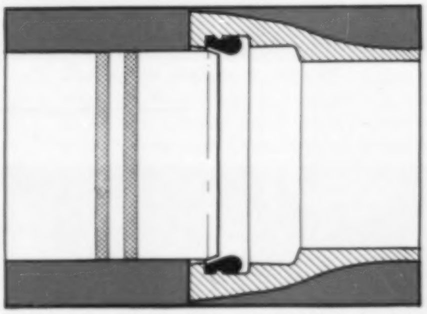
INDUSTRIAL SERVICE ® CAST IRON



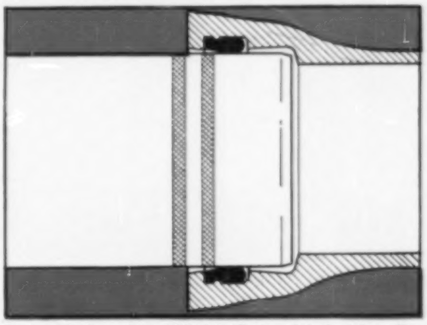
Insert gasket with groove over bead in gasket seat . . . a simple hand operation.



Wipe film of Tyton Joint® lubricant over inside of gasket. Your receiving pipe is ready.

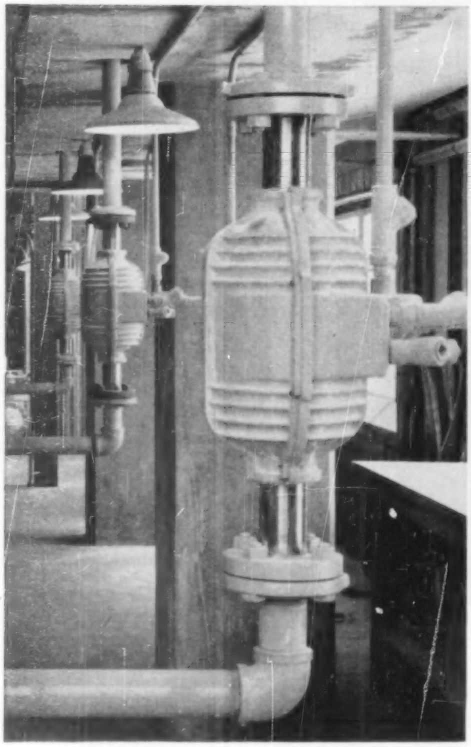


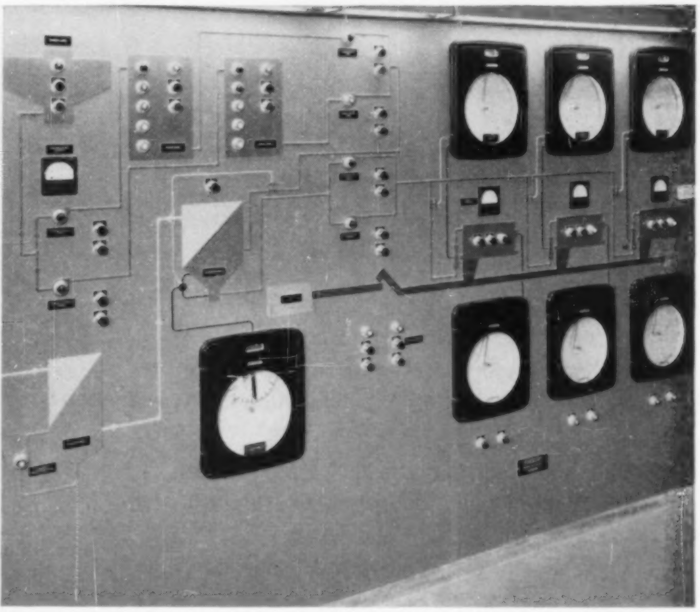
Insert plain end of entering pipe until it touches gasket. Note two painted stripes on end.



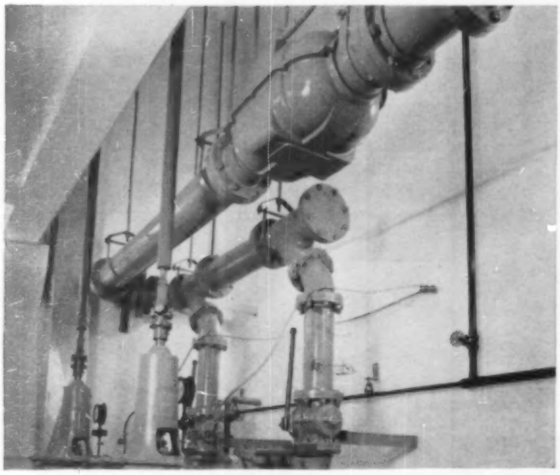
Push entering pipe until the first painted stripe disappears and the second stripe is approximately flush with bell face. The joint is sealed . . . bottle-tight, permanently! The job's done . . . . fast, efficiently, economically. Could anything be simpler?

Foxboro Magnetic Flow problems for





DAYTON, OHIO Three Foxboro Magnetic Flow Meters measure flow of sludge to centrifuges at Dayton's Lime Recalcining Plant. Designed around these meters, plant actually recovers up to 20% more lime than originally added to water. Graphic control panel in Feed End Building operates entire plant.



NEWPORT, R. I. At Newport, R. I. influent at the main sewage plant comes from both the town and a nearby Navy base. Determining how much of the total should be billed to the Navy is the job of the Foxboro Magnetic Meter and Foxboro Dynalog Recorder shown above.

Meters eliminate line restriction these municipal utilities

Introduced six years ago, the Foxboro Magnetic Flow Meter has proved its superiority for measuring water, sewage, sludge and other treatment plant flows.

Foxboro Magnetic Flow Meters have no flow restrictions of any type. No taps to get plugged or frozen, no seals or purges, no moving parts of any type. Measurement is made by electrodes flush-mounted in meter wall — then transmitted by electric cable to a Foxboro Dynalog* electronic recorder. Accuracy is ±1%.

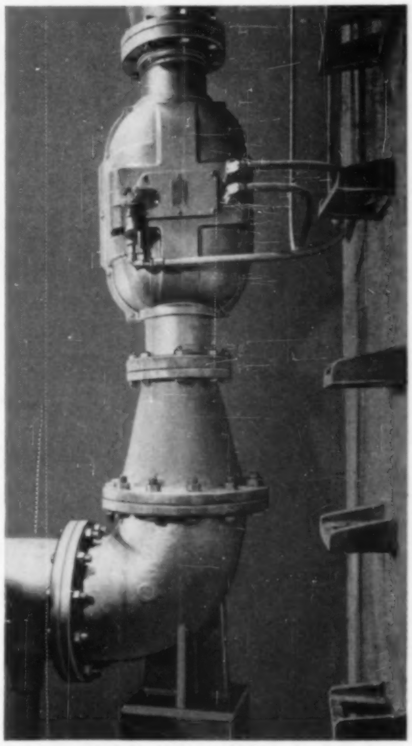
Foxboro Magnetic Flow Meters have solved some of the toughest municipal measurement problems. Ask your Foxboro field engineer to show how it can help with yours. Or write for Bulletin 20-14. The Foxboro Company, 9512 Neponset Avenue, Foxboro, Massachusetts.

*Reg. U. S. Pat. Off.

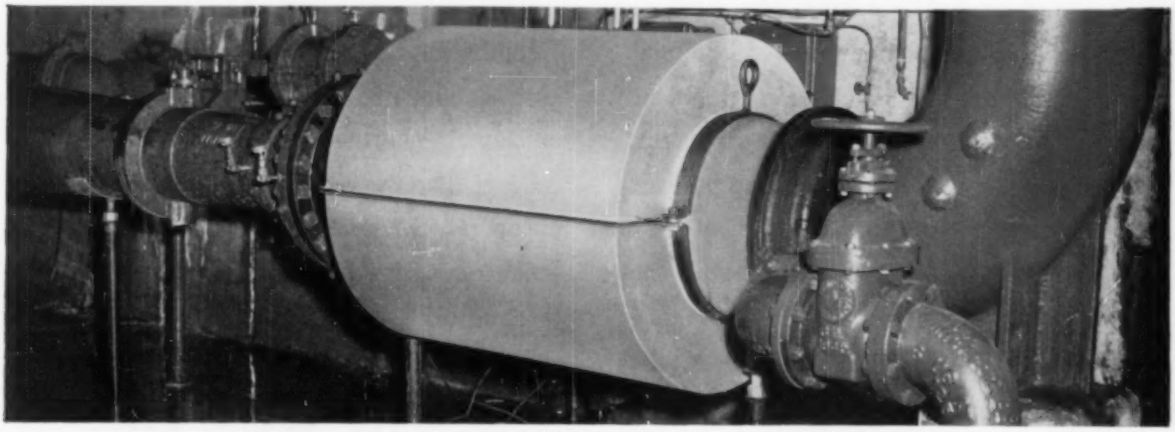
Partial List of Progressive Communities Using Foxboro Magnetic Flow Meters

Benton Harbor, Michigan	— raw sewage
Hayward, Calif.	— water
Pittsburgh, Pa. (Allegheny County Sanitary Authority)	— raw sewage
Covington, Ohio	— return activated sludge
Medfield, Mass.	— water
Orange County, Calif.	— sewage
Warren Township, Michigan	— raw sewage and sludge
Bloomfield Township, Michigan	— water
Seattle, Washington (Lake City Sewage Plant)	— sludge
Milwaukee, Wisconsin	— sludge
Piqua, Ohio	— sludge
Arkansas City, Kansas	— sewage
Sidney, Ohio	— return activated sludge
Frazer, Michigan	— raw sewage

Meter sizes on these installations range from 3 inches to 6 feet.



FARMERS BRANCH, TEXAS Eight-inch Magnetic Flow Meter at a sewage lift station. Meter was installed below ground level, right next to elbow and valve, without affecting its measurement accuracy.



CHICAGO, ILLINOIS This 20" Foxboro Magnetic Flow Meter was installed in the South District Filtration Plant in April, 1956. Because it has no line restrictions, plant officials knew the meter would add no more pressure drop than an equivalent length of pipe. Note how it was installed directly downstream from an elbow.

FOXBORO

REG. U.S. PAT. OFF.

ARE YOU THINKING AHEAD ON FIRE APPARATUS POWERPLANTS?

Perhaps you are one of the progressive fire officials throughout the country who are showing a strong interest in new types of apparatus powerplants. Today's ever increasing protection and budgetary problems may be causing you to look for even better apparatus performance, dependability, and operating economy. If so, you should:

CONSIDER THE ADVANTAGES OF DIESEL-POWERED APPARATUS

Diesel power is the only new power for fire apparatus proved by millions upon millions of miles of actual truck service. Diesel engines provide excellent road and pumping performance because they reach peak h.p. at lower engine speeds than gasoline engines and they excel even the finest gasoline powerplants in dependability and long life. Moreover, they can run 35% longer on each tankful of fuel and idle for hours with no harm to engine.

Equally important, they can cut operating costs as much as fifty percent. Basically more efficient, they provide substantially greater fuel mileage than the best of gasoline engines, using cheaper fuel. And they greatly reduce maintenance costs because they are far more trouble-free. Of all automotive diesel engines built in this country today, the record shows that the leader in performance, economy and dependability is the . . .

MACK THERMODYNE® DIESEL

WHAT ARE THE ADVANTAGES OF THE MACK THERMODYNE® DIESEL?

1 Maximum performance at operating and pumping speeds. Develops 230 HP at 2300 rpm and 583 lb.-ft. of torque at 1600 rpm. Turbocharged for peak efficiency.

2 Minimum fuel consumption. The inherent efficiency of diesel power gives the advantage of being able to pump 35% longer on a tankful of fuel. Reduces need to refuel during long pumping assignments, eliminates danger of handling highly flammable gasoline, and also eliminates danger of carbon monoxide fumes. Diesel fuel is considerably cheaper than gasoline and contains more BTU's.

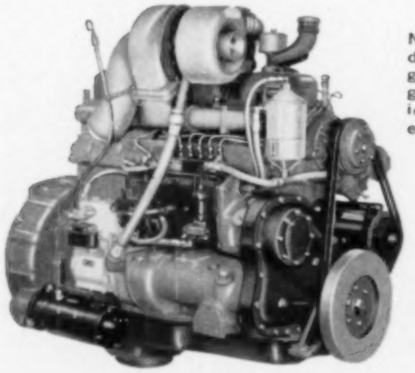
3 Maximum power at altitude. No power loss at all up to 6000 feet above sea level with the Mack Turbocharged diesel and only a 2% loss per 1000 feet above 6000. With gasoline power the loss is 3% per 1000 feet right from sea level on up.

4 Maximum dependability 4-cycle, 6-cylinder design. Cooler-running. No spark plugs to foul. No ignition systems to short out. The most dependable engine ever made by Mack—the standard of dependability.

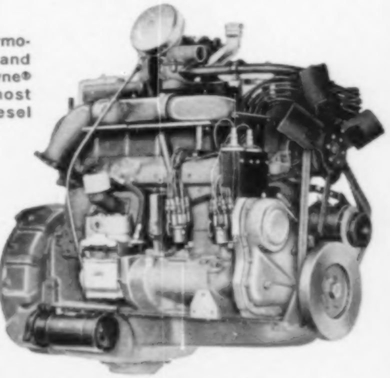
5 Minimum maintenance. Mileages of 300,000, 400,000—even 700,000 miles in truck service—before engine overhaul means thousands of engine hours in fire service. Will not foul up during long periods of idling. Built with typical Mack strength and servicing ease. Similarity to Mack Thermodyne® gasoline engines simplifies mechanics' training—over 350 Mack service centers expedite servicing and parts supply.

The famous Thermodyne® diesel engine is made by Mack. It is part of the exclusive Mack concept of Balanced Design . . . by which all major components are Mack-built to the highest standards of the industry . . . to work together to a degree of efficiency unmatched by apparatus assembled with purchased components. We build them—we stand behind them 100%. Who else can say the same? Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

8467



Note similarity of Mack-built Thermodyne® diesel and gas engines! Size and general appearance of Thermodyne® gasoline engine (right) are almost identical with Thermodyne® diesel engine (left).



MACK FIRST NAME FOR FIRE APPARATUS

COMPLETE LINE OF PUMPERS . . . 500 TO 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65' TO 146' . . . COMBINATION LADDER TRUCKS

Rugged, every inch of the way

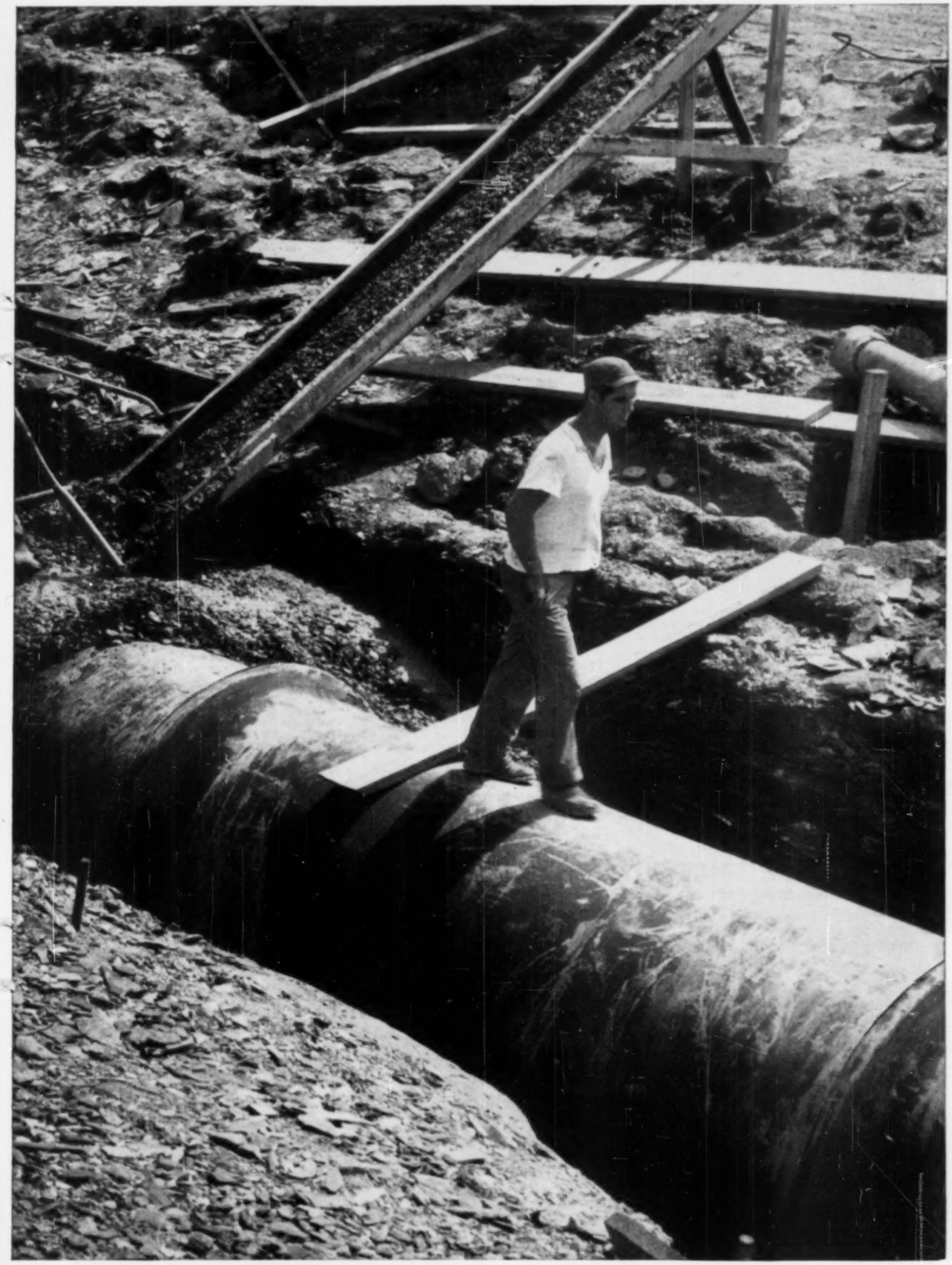
Cast iron pipe was made for tough jobs such as sewage disposal. It resists attack by sewage and sewage gases that require expensive linings in other types of pipe; it keeps sewage flowing smoothly.

Cast iron pipe performs a tough job. It stands up to external and internal loads, shocks and pressures. Bottle-tight joints *eliminate* seepage and infiltration at the most vulnerable points of your system.

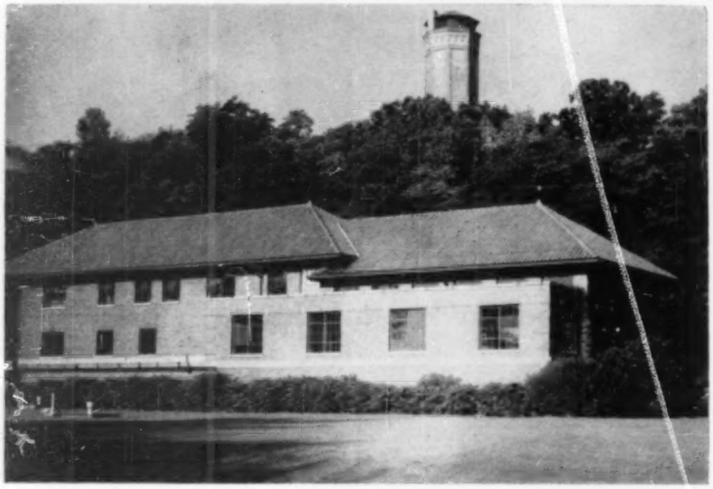
Cast iron pipe is rugged every inch of the way . . . and will remain so for over a century.

CAST IRON PIPE
THE MARK OF PIPE THAT LASTS OVER 100 YEARS

CAST IRON PIPE RESEARCH ASSOCIATION
Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois



Use Northern Gravel for Rapid Sand Filter



Here is the Winnetka, Illinois Filter Plant. They report having used filter sand and gravel purchased from the Northern Gravel Company for several years and are very pleased with the uniform quality they have always received.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 47 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Box 307 **Muscatine, Iowa** **Phone: AMherst 3-2711**

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Measures Water, Sewage, Sludge Flows

125 *Bulletin* 20-14 tells about a magnetic flow meter that has no flow restrictions of any type. Measurement is made by electrodes flush-mounted in meter wall. Accuracy is ± 1%. For a copy, write THE FOXBORO CO., 9512 NEPONSIT AVE., FOXBORO, MASS.

Air Compressor News

126 Price, operating cost, maintenance, design, starting, compression — job results — some of the questions GORDON SMITH & CO., INC., BOWLING GREEN, KY., manufacturer of air compressors in the 45 cfm to 125 cfm class, answers in literature describing its portable and stationary models.

Tax Appraisals

127 THE J. M. CLEMENSHAW CO., specializes in the revaluation of municipalities and rural property for local tax equalization purposes. For brochure and client list, write the company at 1601 BROOKPARK ROAD, CLEVELAND 9, OHIO.

Keeps City Streets De-Iced

128 By writing to SOLVAY PROCESS DIVISION, ALLIED CHEMICAL, 61 BROADWAY, NEW YORK 6, N. Y., you can obtain recommendations for the use of calcium chloride and salt mixtures—specific mixture ratios, application rates, handling methods for greatest effectiveness and economy.

Blast-Clean Water Meters

129 *Bulletin* 32-C explains how water meters, valves and pipe fittings, can be effectively cleaned with speed and thoroughness and without damage by this blast-cleaning process. Write RUEMELIN MFG. CO., 3902 N. PALMER ST., MILWAUKEE 12, WIS.

Trojan Tractor Shovels

130 This 4-page folder shows the 7-model 4-wheel-drive Trojan tractor shovel line at a glance, illustrates them in operation at snow removal, flood control, sewer and water and road work. For a copy, write THE TROJAN DIVISION, YALE & TOWNE MFG. CO., BATAVIA, N. Y.

Waste Treatment Equipment

131 *Bulletin* No. 315-111 briefly describes Rex waste treatment equipment—bar screens, grit collectors, flocculators, skimmers, settling tanks, etc. For your copy, write to CHAIN BELT CO., 4701 W. GREENFIELD AVE., MILWAUKEE 1, WIS.

Mercury Street Lighting

132 New 16-page *Booklet* B-8230 describes Philadelphia's mercury luminaire street lighting system and shows how that city is using mercury luminaires to relight its streets, parking lots, expressways, and interchanges. Write WESTINGHOUSE LIGHTING DIVISION, EDGEWATER PARK, CLEVELAND, OHIO.

Team for Better Ice Control Operations

133 Two sizes of gravity-feed dump body hoppers for straight de-icing salts, which can be used with Type V-3 electric cab-controlled "Scotchman" spreaders, are the subjects of current literature available from TARRANT MFG. CO., 23 JUMEL PLACE, SARATOGA SPRINGS, N. Y.

(See page 47 for more Bulletins)

Now! Get

ON-THE SPOT DRILLING POWER

. . . with Atlas Copco's COBRA !

World's lightest motor drill!

Here's a drill you use to fill in on those jobs where cost, terrain, or time prohibits sending out a compressor crew. Weighs just 53 pounds; easily carried by one man. Completely self-contained with gasoline engine that drills 50-60 feet of hole on a tankload (2 qts.) of fuel. Drills in any position up to 45°. Perfect for light drilling anywhere. Write for complete literature. Address: Dept. AC-60-7

- **One-man operation!**
- **One-man carry; piggyback rig available!**
- **Easy starting—any weather, any altitude!**
- **Multi-use flexibility!**
- **POWERFUL—26 or more feet per hole per hour in hardest granite!**

Atlas Copco

545 Fifth Avenue, New York 17, N. Y.

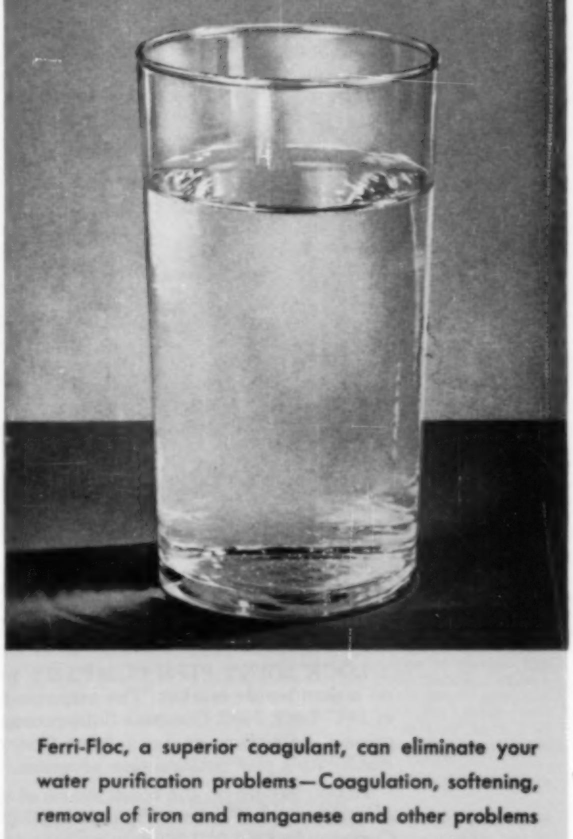
610 Industrial Avenue
Paramus, New Jersey

930 Brittan Avenue
San Carlos, California

Efficient—Reliable COAGULATION

Ferri-Floc

FERRIC SULFATE



Ferri-Floc, a superior coagulant, can eliminate your water purification problems—Coagulation, softening, removal of iron and manganese and other problems encountered in water purification. Our consultants are thoroughly qualified to assist you in producing purer water and would be pleased to come to your plant.

Let us send you more complete information on Ferri-Floc.

Also basic producers of—

SODIUM SILICOFLUORIDE
COPPER SULFATE

TC TENNESSEE CORPORATION
TENNESSEE CORPORATION
612-629 Grant Building, Atlanta 3, Georgia

METROPOLIS OR MOUNTAIN TOP

PILE SLEEVE OR PIPELINE

LOCK JOINT PIPE COMPANY products for a variety of purposes are offered on a world-wide market. The majestic New York skyline looks down on a bargeload of 144″ Lock Joint Concrete Subaqueous Pipe en route to a metropolitan sewer outfall project, as well as on Lock Joint Concrete Pile Sleeves being installed for the Port Authority's pier construction program.

15,000 feet up on the bleak slopes of the Andes, the installation of 40 miles of Lock Joint Concrete Pressure Pipe made vital water available to the Southern Peru Copper Company's $300,000,000 mining enterprise.

So it is throughout the world. Lock Joint products are bringing fertility to the Negev Desert. Additional water flows to thriving Cape Town through a Lock Joint supply line. Lock Joint transmission and distribution mains as well as sewer lines help meet greatly increased demands in booming Caracas. These are only a few of the thousands of communities at home and abroad served with complete satisfaction by Lock Joint Pipe Company.

LOCK JOINT
MADE ITS WAY
BY THE WAY IT'S MADE
CONCRETE PIPE

LOCK JOINT PIPE CO.
East Orange, New Jersey
Member of the AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 53.

Shock-Absorbing Ground Cover for Recreation Areas

134 THE PACIFIC LUMBER CO., BY-PRODUCTS DIV., 100 BUSH ST., SAN FRANCISCO 4, CALIF., announces a new redwood bark product for use in playgrounds and recreation areas and parks. It is said to provide a permanent, resilient and shock-resistant ground cover requiring minimum maintenance.

Insecticidal Fog Generators

135 Seven thousand communities find TIFA gives complete space control at low operating and maintenance cost, proves deadly to pests and insects, can be used as fog or mist spray. Illustrated folder gives details. Write TODD PRODUCTS, DIV. OF TODD SHIPYARDS CORP., COLUMBIA AND HALLECK STS., BROOKLYN 31, N. Y.

Who's Got the Key?

136 No fun to play this costly game. No need to play it either. Not when there's a key control security system that provides a foolproof, easy way to keep track of keys. Ask for 16-page explanatory booklet; write P. O. MOORE, INC., GLEN RIDDLE 66, PA.

Locates Buried Pipe

137 Current catalog from DETECTRON DIVISION OF TINKER AND RASOR, DEPT. A-11, P. O. BOX 243, SAN GABRIEL, CALIF., gives facts on a portable precision instrument that makes short work of determining exact location and depth of buried pipes, cables, manhole covers—the "505".

2-Way Radio Transceiver

138 This unit is said to have twice the sensitivity and more than 40% increase in range over similar units with conventional circuitry. Applicable for public works departments, emergency service, traffic control, etc. For literature, write E. F. JOHNSON CO., WASECA, MINN.

Plastic Jointed Sewer Pipe

139 This 4-page illustrated folder gives recommended installation procedures for Amvit plastic jointed vitrified clay pipe and points out the benefits of this pipe to the engineer, municipality, contractor. For copy, write AMERICAN VITRIFIED PRODUCTS CO., CLEVELAND, OHIO.

Dry Chemical Feeders

140 These units are designed for the accurate feeding of chemicals required in water filtration and sewage treatment plants. Of the diminishing batch weigh feeder-type, they're described in a condensed catalog available from SYNTRON CO., 430 LEXINGTON AVE., HOMER CITY, PA.

Truck-Mounted Trencher

141 Specifications, truck-trencher speeds of this working combination, which achieves 50-mph road speed and has three digging chain speeds, are included in brochure available from CHAMPION CARRIERS, INC., P. O. BOX 2651, TULSA, OKLA.

Power Sweeper for Smaller Cities

142 An improved model of the low-cost, compact Palmer power sweeper incorporates a number of mechanical advances. PALMER ENGINEERING AND MACHINERY, INC., P. O. BOX 3202 STATION B, LINCOLN 2, NEBR., says it's ideal for smaller cities, airports, parking lots. Literature provides full details.

Purer Potable Water

143 An efficient, reliable coagulant can help eliminate your water purification problems—coagulation, softening, removal of iron and manganese, etc. TENNESSEE CORP., 612-629 GRANT BLDG., ATLANTA 3, GA., can tell you about Ferri-Floc and assist you in producing purer water.

Plug-In Street Light Control

144 The new, automatic, on-at-dusk-off-at-dawn Dialatrol introduced by LIGHTGUARD ELECTRONIC MFG. CO., INC., 1213 ST. EMANUAL, HOUSTON 3, TEXAS, has a power-saving feature that lets you dial the operating light level desired in the field, without removing control from its receptacle.

Municipal Incinerator Stokers

145 Custom-designed bar/key or chain grate incinerator stokers with cast-iron or cast-steel links or keys, in sizes up to 24 feet wide are the subject of current catalog literature offered by ILLINOIS STOKER, ALTON, ILL.

Outdoor Lighting Equipment

146 The PTL luminaire is well suited for pool, marine, driveway, airport applications. It's one in a complete line of luminaires, in a wide variety of types, in fluorescent, mercury and incandescent, offered by LINE MATERIAL INDUSTRIES, MILWAUKEE 1, WIS. Literature available on request.

Compact Loader

147 Only 9 feet long, including scoop, this new machine turns around in its own length and is said to move fast enough to load and dump as much bulk material as loaders twice its size. The "Bobcat" has lift capacity of 1000 pounds; lift height over 8 feet. Write MELROE MFG. CO., GWINNER, N. D.

Budget-Priced Aerial Equipment

148 Descriptive literature is now available on a new development from McCABE-POWERS BODY CO., 5900 N. BROADWAY, ST. LOUIS 15, MO.—a smaller, hydraulic aerial beam called "The Little Guy," for use on a variety of overhead municipal maintenance jobs.

Sewer, Water Main Cleaning By TV

149 A new catalog explains the sewer and water main cleaning services available from ACE PIPE CLEANING, INC., 4000 E. TRUMAN ROAD, KANSAS CITY 27, MO. These include underground pipe inspection via closed-circuit TV of 4-inch and larger pipes.

Municipal Construction Castings

150 NEENAH FOUNDRY CO., NEENAH, WIS., specializes in construction castings. It has 15,000 patterns on hand. Its 168-page catalog of gray and ductile iron castings will be sent upon request.

Improved Grounds Maintenance Equipment

151 A number of key improvements in the 1962 line of Lawn-Boy outdoor power equipment are aimed at tailoring this equipment to a full range of lawn, garden and snow removal applications. Descriptive literature gives full details. Write LAWN-BOY, OMC ENGINES & EQUIPMENT DIV., OUTBOARD MARINE CORP., 528 W. HIGHLAND AVE., MILWAUKEE, WIS.

Siren, P. A., Radio Amplifier System

152 A new 75-watt, one-package Penetrator warning and communications system for emergency vehicles is intended for use by police cruisers, highway patrol cars, fire department vehicles, ambulances, helicopters, etc. THE FYR-FYTER CO., DAYTON, OHIO, will provide literature and full facts.

Better Seals for Concrete Pipe

153 *Manual* 4 supplies detailed information and engineering data on Press-Seal confined compression-type gaskets, including materials for lines carrying oil content, acid content and common sewage. Write PRESS-SEAL GASKET CORP., P. O. BOX 482, R. R. 6, COVINGTON ROAD.

Rotary Mowers and Tractors

154 Whether your mowing job is a small lawn or many acres, park or golf course, straightaway or hill, you'll find this new line of Snapper rotary mowers and estate tractors able to match any mowing job. For copy of this 8-page catalog, write MCDONOUGH POWER EQUIPMENT, INC, MCDONOUGH, GA.

Voting Machines

155 Do voters prefer to use a voting machine? Are automatic voting machines really more economical? More efficient? More accurate? These and virtually any other question on voting machines will be answered by AUTOMATIC VOTING MACHINE CO., JAMESTOWN, N. Y.

Material Spreaders

156 . . . for winter ice control and for summer resurfacing are to be found in up-to-date literature offered by SWENSON SPREADER, LINDENWOOD, ILL. Replaceable tail gate model, V-Box style spreader, and forced feed, roll-type units described.

Flow Tube for Gases, Liquids

157 New *Specification Data Ref.* No. 123.201-1, which gives operation, uses and advantages of Series 123 Weldmont Type Dall Flow Tubes, features a series of designs that allow the use of many metals to meet the many and varied demands in the field of fluid and gas measurement. Write B-I-F INDUSTRIES, P. O. BOX 276, PROVIDENCE 1, R. I.

Brush Disposal

158 Improvements in the Fitchburg line of brush chippers add up to safer, less costly brush disposal. For full facts on these well-engineered machines, write to FITCHBURG ENGINEERING CORP., DEPT. AC-112, FITCHBURG, MASS.

Emergency Reporting System

159 An emergency-reporting system that offers communities a versatile, reliable, and quick system for reporting emergencies to fire central office and police central office is carefully described in an 8-page bulletin. For copy, write AUTOMATIC ELECTRIC SALES CORP., NORTHLAKE, ILL.

Vehicle Detector Manual

160 Section TD 4C is an installation and operation manual for the overhead-mounted Eagle "I" infrared vehicle detector, designed to provide relay contact closure during the time a vehicle is within the zone of detection. For copy, write EAGLE SIGNAL CO., MOLINE, ILL.

(See page 48 for more Bulletins)

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 53.

New Series Emergency Electric Generators

161 WINCHARGER CORP., SIOUX CITY 2, IOWA, has designed these special units to provide electric power for the basic necessities of safe survival in fall-out shelters—lighting, ventilation, radio, hot plate, refrigerator. Specifications, installation, operating instructions, full details available.

Swings Its Boom 180°

162 An adaptable, versatile, all-purpose material handler designed to reduce equipment investment and maintenance costs reportedly replaces 4 to 7 machines. PETTIBONE MULLIKEN CORP., 4700 W. DIVISION ST., CHICAGO 51, ILL., will send literature on the Speed Swing on request.

Materials Spreader

163 *Form* 340 gives details on Speed-Spread, which spreads ice control materials 36 to 40 feet wide on streets, highways, park roads and parking lots. In warm weather it can be used to spread fertilizer, lime or weed control chemicals in parks or on golf course. Write HARVEY BRANDT, SALES MGR., CALHOUN MFG. CO., INC., CEDAR FALLS, IOWA.

Keep Expressway Traffic Flowing Smoothly, Safely

164 *Brochure* No. F-101 explains how to get maximum production, service and safety on freeways, superhighways and expressways with Electro-Matic freeway automation. Write AUTOMATIC SIGNAL DIVISION, EASTERN INDUSTRIES, NORWALK, CONN.

Engineered Park and Playground Equipment

165 Within the 16 pages of this catalog you'll find a variety of colorful, sturdy playground equipment that will appeal to the imagination of youngsters, as well as some equipment for municipal picnic sites. Write THE MEXICO FORGE, INC., MEXICO, PA.

Municipal Incinerators

166 *Bulletin* 701 supplies full details and specifications for these reciprocating grate incinerator stokers for municipal and industrial incinerators. For copy, write DETROIT STOKER CO., DIVISION OF UNITED INDUSTRIAL CORP., MONROE, MICH.

Lighting—When and Where you Want It

167 Now you can have a battery of powerful, dependable, floodlights on construction jobs, earth moving, pipeline projects, police disaster scenes in just minutes. Trav-A-Lite portable floodlighting equipment makes it possible. For catalog, write THE RIG-A-LITE CO., INC., 2102 69TH ST., HOUSTON 11, TEXAS.

Waterworks Men

168 Here's a new flexible socket valve wrench that can be used to operate underground valves properly installed and to open and close "crooked" valves, or valves whose valve boxes shifted out of line. Write JAMES B. CLOW & SONS, INC., 201-299 N. TALMAN AVE., CHICAGO 80, ILL.

Spectator Seating

169 Specifications, construction features, and general information about portable and permanent bleachers and grandstands for schools, recreation areas and sports arenas are given in Folder G-1/Wi, available from WINKLER MFG. CO., INC., P. O. BOX 336, BATON ROUGE, LA.

Expands Truck Line

170 Included in the Chevrolet expanded truck line for 1962 are five heavy-duty models powered by a 195-hp. 6-cylinder, 2-cycle GM diesel engine. For full details on these models and full line, write CHEVROLET MOTOR DIVISION, GENERAL MOTORS BLDG., DETROIT 2, MICH.

Instruments for Surveying

171 A 4-page illustrated folder presents a broad and complete line of instruments that meet requirements for engineering, surveying, photogrammetry and microscopy. It's been published by WILD HEERBRUGG INSTRUMENTS INC., MAIN AND COVERT STS., PORT WASHINGTON, N. Y.

Aluminum-Coated Steel Fence

172 Tests show this Cyclone property protection fence to be 50% stronger than all-aluminum fence, highly corrosion resistant and superior in its resistance to fire. For details, write AMERICAN STEEL AND WIRE, ROCKEFELLER BLDG., CLEVELAND 13, OHIO.

Motors for Pumping Requirements

173 New 6-page *Booklet* 10-A, entitled "Ideal Power Pumps for the Motor City," contains photos and brief descriptions of the facilities and pumping motors (100 hp to 2750 hp) that assist in making the Detroit water and sewage systems as fine as they are. Write THE IDEAL ELECTRIC AND MANUFACTURING CO., DEPT. 189, MANSFIELD, OHIO.

(See page 56 for more Bulletins)

SOMETHING'S MISSING

Where's George Washington? Where's the message in the warning sign?

Weather could, in time, remove Washington's likeness from Mt. Rushmore, but weather couldn't remove all identification from the face of a DIE EMBOSSED steel sign.

Not in its normal lifetime. DIE EMBOSSING gives traffic signs a third dimension, *d-e-p-t-h*, which adds an extra measure of visibility to safety . . . the sole purpose of traffic signs.

The firms listed below urge you to use die embossed signs in your community.

LYLE SIGNS, INC.
2720 University Ave. S.E.
Minneapolis 14, Minn.

VULCAN SIGNS AND STAMPINGS DIV.
P.O. Box 1069
Birmingham 1, Ala.

MIRO-FLEX CO., INC.
1824 E. 2nd St. (Box 514)
Wichita 14, Kans.

GOPHER STAMP AND DIE CO.
Chicago Ave. and Custer St.
St. Paul 7, Minn.

GRIMM STAMP & BADGE CO.
8105 Rosalie Ave.
St. Louis 17, Mo.

ORDER DIRECT FROM THESE MANUFACTURERS

☐ Please send me a copy of your catalog.

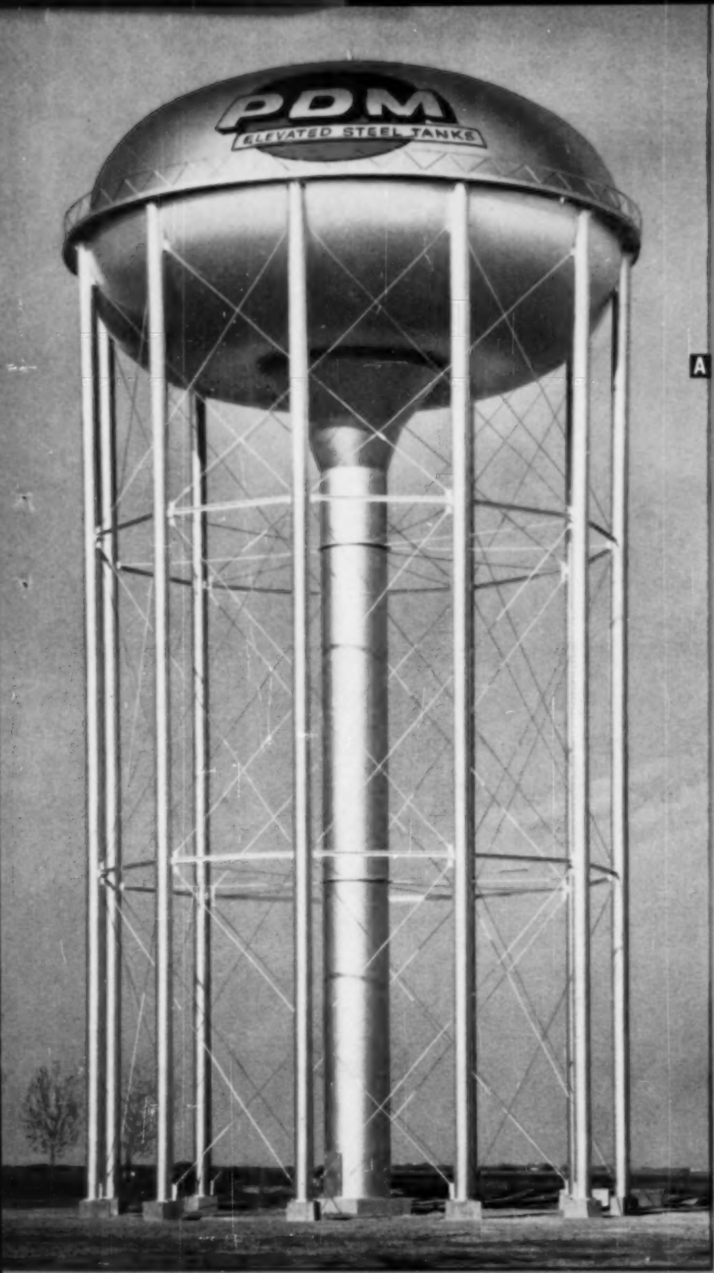
☐ Please furnish a quotation on the attached list of traffic signs.

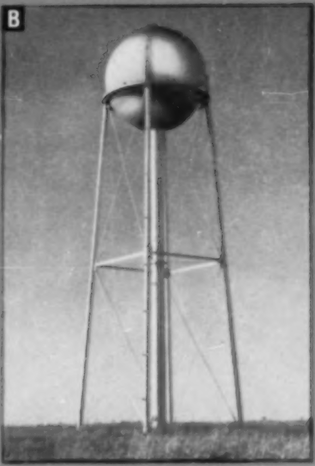
Name____________________

Title____________________

Address____________________

City____________State________





ALL YOU NEED TO KNOW

about the best in water storage!

These PDM Elevated Steel Tank types cover the entire range of modern municipal water storage requirements, from metropolis to village. Each represents the leading value in its field of application—achieved through almost 65 years of PDM specialization in elevated tank design and construction • Superior craftsmanship and guaranteed satisfaction protect your investment when you specify PDM. Consult us on your capacity and service needs: let us send you our illustrated 20-page brochure. Just write the district office nearest you.

A Torospherical
B Waterball
C Pedestal Sphere
D Pedestal Spheroid
E Double Ellipsoidal

PDM
ELEVATED STEEL TANKS

PITTSBURGH-DES MOINES STEEL COMPANY

Plants at PITTSBURGH, WARREN, BRISTOL, PA. • BALTIMORE • BIRMINGHAM • DES MOINES • PROVO, UTAH • CASPER, WYO. • SANTA CLARA, FRESNO, STOCKTON, CALIF.

Sales Offices

PITTSBURGH (25)	Neville Island
WARREN, PA.	P. O. Box 660
BALTIMORE (26)	P. O. Box 3459, Curtis Bay Station
BIRMINGHAM (8)	P. O. Box 8641, Ensley Station
DES MOINES (8)	1015 Tuttle Street
PROVO, UTAH	P. O. Box 310
SANTA CLARA, CALIF.	P. O. Box 329
EL MONTE, CALIF.	P. O. Box 2012
NEW YORK (17)	200 East 42nd Street
NEWARK (2)	744 Broad Street
CHICAGO (3)	679 First National Bank Bldg.
ATLANTA (5)	361 East Paces Ferry Rd., N.E.
DALLAS (1)	Suite 1703, Southland Center
DENVER (2)	323 Railway Exchange Bldg.
SEATTLE (1)	500 Wall Street

Read about the most important development

A recent Cyclone Fence development promises to revolutionize industrial fencing throughout the United States. After years of vigorous research, and production line debugging, we are manufacturing an aluminum-coated steel fence of such high quality that we are willing to give it the Cyclone name. Nine years of field testing indicate that no other type of fence can economically match Cyclone Aluminum-Coated Fence's combination of corrosion resistance, tensile strength and heat resistance. Yet the price is only slightly above first-quality galvanized steel fence.

FIRE RESISTANCE

In a brush or debris fire, not uncommon along a fence line, temperatures can easily climb to the 1,300° mark. If the fence fabric melts, your property protection goes with it. The steel in Cyclone Aluminum-Coated Fence will not melt at temperatures below 2,850°. Repeated tests have shown that our aluminum-coated fabric can withstand temperatures as high as 1,650° and still retain its protective coating, and 2,000° for brief periods without the destruction of a single strand of wire.

STRENGTH

The steel wire used in Cyclone Aluminum-Coated Fence has a minimum tensile strength of 80,000 psi, and that strength is retained as long as the coating remains intact. What does this strength mean to you? In actual tests, USS Cyclone Aluminum-Coated Fence was rammed by a car traveling at 35 mph. Not a single strand of wire was broken. ■ Buyers must not underestimate the necessity for strength in industrial fence. If you could "fence your fence" to protect it there would be no problems. But fence has to stand alone, and withstand vandals, side-swiping vehicles, and all sorts of mechanical abuse.

Protect it with USS CYCLONE

in the history of property protection fence

CORROSION RESISTANCE

Our Research and Metallurgical people have found accelerated weathering and salt spray tests are misleading, therefore the following data is from actual service records: After 9 years of continuous exposure to a severe industrial atmosphere (Cleveland), Cyclone Aluminum-Coated Fence shows practically no deterioration. Even after 9 years of severe marine exposure, 90% of the surface was free of corrosion.

PRICE

The normal market prices for USS Cyclone Aluminum-Coated Fence are only slightly above prices for galvanized chain link fence. And remember, for this very slight premium you're getting the combination of aluminum and steel that gives you superior corrosion resistance and long lasting strength.

KNOW THE BRAND

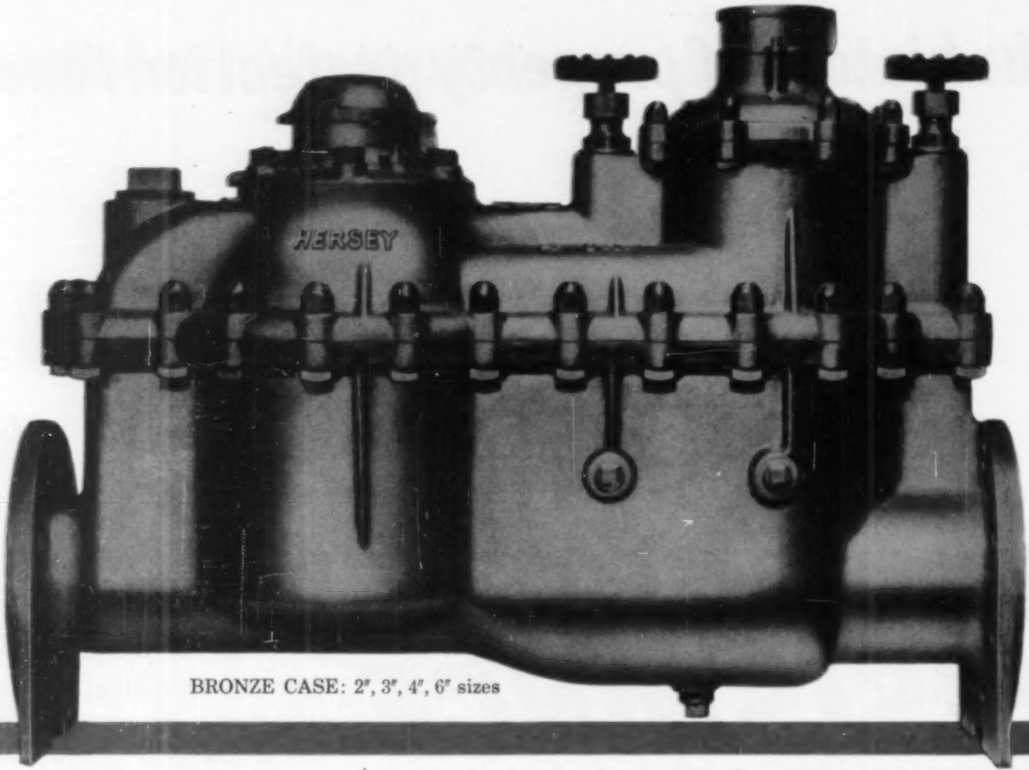
Cyclone is a brand name, not a type of fence. When you buy USS Cyclone you're getting a fence that's pre-engineered, prefabricated down to its smallest part. The Cyclone-developed H-Post is built like a steel beam for extra strength; Cyclone gates are sleeve-constructed—not welded--so they can be easily repaired; one-quality, full-weight fabric; deep-set post installations that don't skimp on concrete or steel, and professional installation by long-time Cyclone crewmen who know how to put up a fence to stay. ■ USS Cyclone has sales offices all over the country and a reputation built on the fact that Cyclone is the most widely used property protection fence in the world. Cyclone Fence is backed by the American Steel and Wire Division of United States Steel—a company that will be around tomorrow to live with what it sells today. ■ 69 CYCLONE BRANCH OFFICES. Cyclone has 69 branch offices throughout the country. Which means, wherever you are, we're reasonably close by. Give us a call next time you need fence around your company's property. Check your Yellow Pages under "Fence." For a brochure on new Cyclone Aluminum-Coated Fence, write American Steel and Wire, Rockefeller Building, Cleveland 13, Ohio.

USS and Cyclone are registered trademarks.

Steel For safety, dependability, economy.

USS

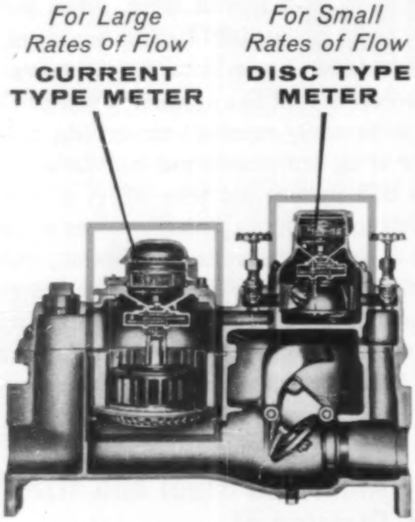
American Steel and Wire
Division of
United States Steel



BRONZE CASE: 2", 3", 4", 6" sizes

The Proved Method of Accurately Measuring a Wide Range of Flows

HERSEY
COMPOUND METER
MODEL CT (BRONZE CASE)



Since 1932 this water meter has been the leader for measuring a wide range of flows. It combines a Current Type Meter (Model T) to measure high rates of flow with a Disc Type Meter (Model HD) to measure low rates of flow. A Hersey Automatic Lever Valve links these meters together, providing an integral device in one casing that accurately measures a larger range of flows than can be accomplished by either type of meter separately. The Automatic Valve is of the compound lever mechanical type which, when opened by a large demand, offers minimum resistance to the flow of water.

The Hersey Compound Meter, Model CT, combines accurate measurement at all rates of flow with a long-time, proved record of minimum maintenance requirements. An exclusive feature is the valves which make it possible to shut off the by-pass meter without closing down the main line meter. Write for more information.

Hersey-Sparling
Meter Company
HERSEY PRODUCTS
DEDHAM, MASSACHUSETTS

Branches: Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Kansas City, Mo., Los Angeles, New York, Philadelphia, Portland, Ore., Salt Lake City, San Francisco, Seattle.

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

Postage
Will be Paid
by
Addressee

No
Postage Stamp
Necessary
If Mailed in the
United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

Reader's Service Dept.

Bad Dreams Can Give Way to . . .

Certificate
City
Engineer

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 34

101 102 103 104 105 106 107 108 109 110 111 112 113
114 115 116 117 118 119 120 121 122 123 124 125 126
127 128 129 130 131 132 133 134 135 136 137 138 139
140 141 142 143 144 145 146 147 148 149 150 151 152
153 154 155 156 157 158 159 160 161 162 163 164 165
166 167 168 169 170 171 172 173 174 175 176 177 178
179 180 181 182 183 184 185 186 187 188 189 190 191
192 193 194 195 196 197 198 199 200 201 202 203 204
205 206 207 208 209 210 211 212 213 214 215 216 217
218 219 220 221 222 223 224 225 226 227 228 229 230
231 232 233 234 235 236 237 238 239 240 241 242 243
244 245 246 247 248 249 250 251 252 253 254 255 256
257 258 259 260 261 262 263 264

I would also like to receive manufacturers' booklets on..
....
....
....

Name: (Please Print)..

Title:..

Address:..

.... 12-61

A Listing of Your Business Connection Is Important

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 34

101 102 103 104 105 106 107 108 109 110 111 112 113
114 115 116 117 118 119 120 121 122 123 124 125 126
127 128 129 130 131 132 133 134 135 136 137 138 139
140 141 142 143 144 145 146 147 148 149 150 151 152
153 154 155 156 157 158 159 160 161 162 163 164 165
166 167 168 169 170 171 172 173 174 175 176 177 178
179 180 181 182 183 184 185 186 187 188 189 190 191
192 193 194 195 196 197 198 199 200 201 202 203 204
205 206 207 208 209 210 211 212 213 214 215 216 217
218 219 220 221 222 223 224 225 226 227 228 229 230
231 232 233 234 235 236 237 238 239 240 241 242 243
244 245 246 247 248 249 250 251 252 253 254 255 256
257 258 259 260 261 262 263 264

I would also like to receive manufacturers' booklets on ....

....

....

....

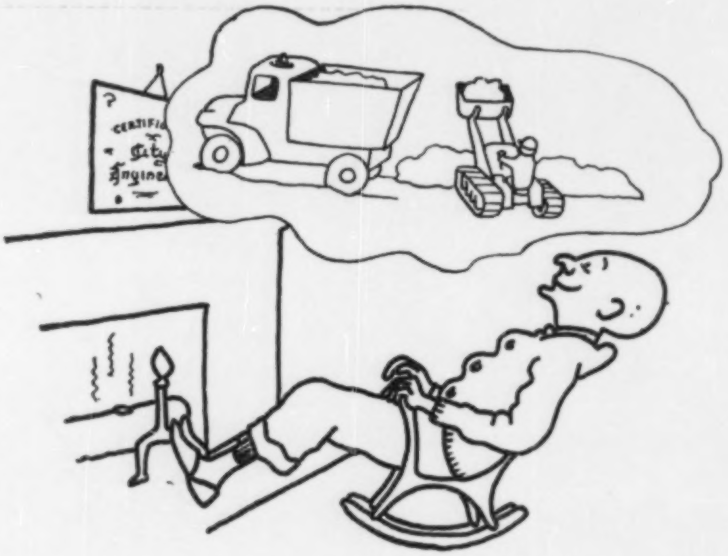
Name: (Please Print) ....

Title: ....

Address: ....

.... 12-61

A Listing of Your Business Connection Is Important



Peace of Mind

Postage
Will be Paid
by
Addressee

No
Postage Stamp
Necessary
If Mailed in the
United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

Reader's Service Dept.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

ACCP* BRINGS ABUNDANT GOOD WATER TO CARLSBAD FROM ANCIENT DESERT REEF

...OPENS WAY FOR 50 YEARS OF INDUSTRIAL GROWTH!

MAIN TRANSMISSION LINE of 33" American Concrete Cylinder Pipe extends 33,000 feet northward toward Carlsbad, just below the horizon. Portions of well-collector lines radiate from one of seven automatic pumping stations (white spot in center).

CREW PRECISELY ALIGNS 32-ft. lengths of 24" American Concrete Cylinder Pipe before joining sections. Installation of the 110,000 feet of gathering and transmission lines was completed substantially ahead of schedule.

PIPE LAYING CRANE easily and quickly joins spigot end of ACCP with bell end of previously laid section.

The City of Carlsbad, New Mexico has taken dramatic steps to meet the challenge of today before it becomes the problem of tomorrow. It can now boast a water system that will meet anticipated growth of industry and populace for the next fifty years without need for enlargement. This progressive city of 27,000 has wisely invested $2,500,000 to bring high quality water through a permanent pipeline system from a 200,000,000-year-old sandstone reef located seven miles away. Capitan Reef accumulates an estimated 60,000 acre-feet of natural recharge annually... clean, relatively soft water that will encourage industrial expansion.

The new pipeline system was specifically planned for the future, with 14" to 36" American Concrete Cylinder Pipe specified for all gathering and transmission lines. Although designed for gravity flow up to 32,000 gpm. the 150 psi line can be fully pressurized for substantially greater discharge whenever the City's growth warrants. It will never create a bottleneck in Carlsbad's water supply program!

In your plans for the future of your community, it will pay you to consult American Pipe and Construction Co., manufacturers of modern pipe for man's most ancient problem: WATER.

* AMERICAN CONCRETE CYLINDER PIPE

AMERICAN PIPE AND CONSTRUCTION CO.
LOS ANGELES • SAN DIEGO • HAYWARD • PORTLAND • BOGOTA, COLUMBIA
AMERICAN CONCRETE PIPE CO. • PHOENIX • ALBUQUERQUE
Write P.O. Box 3428, Terminal Annex, Los Angeles 54, California
A MEMBER OF THE AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 53.

Designed for Snow Removal

174 A heavy-duty machine that's been designed and built to remove snow, does so by throwing snow directly into a truck or over the side of the road. Comparatively economical, it also accommodates a rotary or reel mower to take care of lawn and ground maintenance. For literature, write SNO-MOWER INC., 217 WALL ST., HUNTINGTON, N. Y.

Law Enforcement Vehicles

175 There are three new police-size Lark Marshals for 1962. One is built for routine patrol and detection work, the second for all-purpose enforcement, the third for pursuit—fast take-off, sustained speeds over 100 hp. For details, write POLICE VEHICLE ENGINEER, STUDEBAKER FLEET DEPT., SOUTH BEND 27, IND.

Burners Handle Variety of Municipal Jobs

176 *Bulletin* TO-2 introduces a new line of No. 99 burners suitable for weed burning, stump removal, disinfecting chores, thawing, insect and rodent control. Available with either 4- or 5-gallon fuel tank, the units provide a 2,000° flame. Write AEROIL PRODUCTS CO., INC., S. HACKENSACK, N. J.

Water Filter Sands and Gravel

177 When you specify Northern sand and gravel you get clean filtering media that have been carefully graded and with the chemical and physical properties needed to assure proper filtering in the most meticulous water filtering plant. Write NORTHERN GRAVEL CO., P. O. Box 307, MUSCATINE, IOWA.

Transite Conduit

178 Conduit made of asbestos cement provides durable and dependable protection for cable systems. Two types are presented in 12-page A.I.A., File No. 31-C-62: one for direct burial or exposed work; the other for installation in concrete. Write JOHNS-MANVILLE, 22 E. 48TH ST., NEW YORK 16, N. Y.

Air Pollution

179 Industrial air pollution creating problems in your community? Want to take corrective action? A new descriptive brochure from CATALYTIC COMBUSTION CORP., 4725 FOURTEENTH ST., DETROIT 8, MICH., attention: MUNICIPAL ENGINEER, DEPT. C., might just be the help you're looking for.

What Makes a Superior Sweeping Broom Filament?

180 Toughness? Flexibility? Chemical, grease, acid resistance? Long service life? These are some factors to be considered when aiming at better street sweeping at less cost. Why not let FREDERICK H. CONE & CO., INC., 181 FRONT ST., NEW YORK 38, N. Y., tell you about others and Wynene 18 polypropylene broom filler which is especially engineered for rotary brooms.

New Series of Accounting Machines

181 A new line of numeric accounting machines for general business and financial applications replace some 15 Sensimatic models and reflect complete restyling and price adjustments, as well as improvements. For details and applications, write BURROUGHS CORP., EQUIPMENT & SYSTEMS DIV., DETROIT 32, MICH.

Recommended for Sewage Treatment Plants

182 Engineer's Service Sheets AC-1061 provide details and specifications for aluminum glass covers which increase efficiency of sludge drying beds and are recommended for trickling filters and settling tanks. Write LORD & BURNHAM, DIVISION OF BURNHAM CORP., IRVINGTON, N. Y.

Water Well Services

183 Water wells need rejuvenating? Casings leaking? Want to shut off unwanted water? Flow channels need enlarging? HALLIBURTON CO., DUNCAN, OKLA., can help you with your water well problems — from early planning through completion of your well.

Outdoor Lighting Equipment

184 A 136-page catalog lists hundreds of outdoor lighting products, applications and specifications. For your copy of this easy reference catalog of outdoor lighting equipment, write REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

Modern Perpetual Motion

185 Just released by CATERPILLAR TRACTOR CO., PEORIA, ILL., this booklet covers applications of Cat track-type and wheel-type loaders, describes "modern perpetual motion" as the constant motion of power of Cat loaders at work, and gives seven job studies to illustrate it. Request *Form* DI22.

Salvage Digester Gas

186 Digester gas from sewage purification is a valuable fuel that can appreciably reduce treatment costs, reports R. D. COLE MFG. CO., NEWMAN, GA., whose current catalog will acquaint you with a dependable line of gas holders for the recovery of this gas for fuel.

Radial-Type Air Compressors

187 Radial-type air-cooled, engine-driven air compressors built for continuous operation and designed to deliver steady, economical performance are described in literature offered by P. K. LINDSAY CO., INC., DEERFIELD, N. H. Capacities range from 55 cfm to 125 cfm.

Cast Aluminum Street Signs

188 *Brochure* AC will introduce you to a complement of long-lasting, maintenance-free, low-cost street signs which can be seen from a distance of 150 feet and are available in satin or Prismo reflectorized letters. Write LAKE SHORE MARKERS, INC., 654 W. 19TH STREET, BOX 59, ERIE, PA.

Mercury Vapor Floodlights

189 STONCO ELECTRIC PRODUCTS CO., 333 MONROE AVE., KENILWORTH, N. J., reports that its new sealed-beam mercury vapor line of floodlights permits more economical wide-area lighting with fewer transformers, fewer poles, and budget fixtures that require virtually no maintenance.

Root Out Weed Control Problems

190 Herbicides that control both broadleaf weeds and grasses and make possible full season weed control from one application are subjects of current literature offered by GEIGY AGRICULTURAL CHEMICALS, DIV. OF GEIGY CHEMICAL CORP., SAW MILL RIVER ROAD, ARDSLEY, N. Y. Ask about Atrazine and Simazine.

Trims, Mows in One Operation

191 Literature from LOCKE POWER LAWN MOWERS, 1315 CONNECTICUT AVE., BRIDGEPORT 1, CONN., presents single and triplex mowers in four basic sizes that save time, money, energy on mowing jobs, leave no uncut, matted-down grass—just smooth, clean-cut lawn.

Waterfront Facilities Catalog

192 Designed as a guide to planning and expansion of lake and river recreational facilities, this catalog illustrates a variety of basic pier styles in modular and expandable design both in rigid and floating type construction. "Piers for Camps, Municipalities, Resorts," is available from STANDARD STEEL PRODUCTS MFG. CO., 2836 S. 16TH ST., MILWAUKEE 15, WIS.

Lightweight Drill Will Travel

193 This self-contained motor drill delivers on-the-spot drilling power. It weighs 53 pounds, drills 26 or more feet of hole per hour in granite, and can be used where it's not practical to send a compressor crew. Write ATLAS COPCO., 545 FIFTH AVE., NEW YORK 17, N. Y.

Reflective Traffic Products

194 *Catalog* 65B tells all about Cataphote reflective glass beads for pavement marking; reflective traffic paint, plastic striping, plastic tiles, reflective coating for reflectoring signs and markings and V-S-R kits for reflectorizing bridge abutments and roadway hazards at low cost. Write CATAPHOTE CORP., TOLEDO 10, OHIO.

Planned Sewer Maintenance

195 An effective sewer maintenance program holds down costs for your community. AAA ELECTRIC SEWER CLEANING CO., 9501 EUCLID AVE., CLEVELAND 6, OHIO, will be glad to explain the benefits and operation of such a program, as well as the techniques involved.

New Compact Turnstiles

196 Wherever an exact customer count, tighter control of gate receipts, faster traffic flow are desirable, these turnstiles have a place. Both portable and permanent models available. Write BRIGHT-JOHNSON DEPT. AMC, JOHNSON FARE BOX CO., 4617 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

Pavement Marking Materials

197 Here are 16 pages of information on Perma-Line thermoplastic compound pavement materials and equipment. Wearing ability, cost factors, specifications, uses, applications, etc., included. For a copy, write PERMA-LINE MFG. CORP. of AMERICA, 750 S. CLINTON ST., CHICAGO 7, ILL.

Law Enforcement Equipment

198 A browse through the pages of this spiral-bound booklet will reveal a virtually complete and varied amount of products that will be of direct interest to municipal law enforcement agencies. For copy, write FEDERAL LABORATORIES, INC., SALTSBURG, PA.

Valves for Concrete Pipe

199 *Circular* No. 26 deals with double disc valves with O-ring joints for concrete pipe. It's well-illustrated, decits installation procedure, explains how to save the cost of adapters when installing valves. Write M & H VALVE AND FITTING CO., ANNISTON, ALA.

(See page 58 for more Bulletins)

BEST NEWS YET FOR "HEAVY" PAINT JOBS ONE-COAT ENAMELS THAT FIGHT RUST BETTER THAN YOU EVER BELIEVED POSSIBLE

Prove it yourself! On your next equipment repaint job, specify enamels containing *M50*® Basic Lead Silico Chromate pigment. You'll save money on reduced maintenance . . . get longer-lasting protection for hard-working machines! They'll *look* better, too. *M50* pigment keeps an enamel's color *uniform*. And *M50* enamels can be tinted to match your standard equipment color—or to create distinctive new shades.

Big preventive maintenance advantages are built into *M50* Basic Lead Silico Chromate pigment. This unique pigment offers outstanding rust inhibition . . . combined with superior resistance to weathering. You get the rust protection of a primer plus the long-lasting durability of a finish coat . . . all in a single coat that saves time and money. Even if the finish coat is damaged, *M50* pigment greatly retards rust staining of the paint surface and restricts under-the-film rust creepage to the immediate vicinity of the break. Call your paint supplier today or write us for a colorful brochure with dramatic photographs of tests which show metal *protection* with *M50* pigmented enamels. Ask him about *M50* Basic Lead Silico Chromate enamels for your heavy equipment.

M50® an **oncor**® **Pigment... A Development of National Lead Company**

General Offices: 111 Broadway, New York 6, N. Y.

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 53.

Valves for Municipal Applications

200 These valves are designed for economical operation in water filtration and sewage treatment plants, pumping stations, power plants, drainage projects and flood control projects. They include new check valves, flap and mud valves, and shear gates. For complete information and specifications, write MUELLER CO., DECATUR, ILL.

Sewer Cleaning Equipment

201 Three valuable bulletins on sewer cleaning equipment and operations have been released by FLEXIBLE INC., 3786 DURANGO AVE., LOS ANGELES, CALIF. *Catalog* No. 61-A deals with preventive maintenance; *Catalog* No. 59-Z offers 23 pages of information on power bucket machines; the third presents tools that are the "key to cleaning sewers."

Separates Grit from Sewage and Wastes

202 *Bulletin* 5,000 gives principle of operation and standard dimensions and details of the Vortex grit remover, which separates grit and other inert material from sewage and wastes. Pre-aeration and grit removal is also gone into. For copy, write INFILCO INC., TUCSON, ARIZ.

Weed Killers

203 Brochure from NATIONAL CHEMSEARCH CORP., P. O. BOX 10087, DALLAS, TEXAS, details four weed killers: Veg-Out, a nonselective formulation that attacks roots of all vegetation; Pentex, for deep penetration; F-40, for knockdown or tip-kill of weeds or grasses; Deep Kill, for quick penetration and partial selectivity.

Water Filter Sands and Gravel

204 When you specify Red Flint sands and undergrain gravel you specify a high silica content product, uniformally graded within close limits and available in large as well as small sizes and processed to exacting specifications. For literature, write EAU CLAIRE SAND & GRAVEL CO., EAU CLAIRE, WIS.

Cleans, Deburs Meters, Parts

205 Ultrasonic cleaning and deburring technique is especially recommended for cleaning of parking and water meters, traffic counter clocks, street lighting control clocks, traffic controls, fire alarm movements, etc. For information bulletin and list of municipal users, write ULTRASONIC SERVICES ASSOCIATES, INC., 3200 LAWSON BLVD., OCEANSIDE, N. Y.

Electric Plants for Fallout Shelters

206 This 4-page pamphlet explains the value of an independent power source for emergencies and tells how to choose the appropriate electric plant. For a copy, write KOHLER CO., KOHLER, WIS.

Goes to Full Power in 15 Seconds

207 The opposed-piston diesel generating units provide full power from a cold start, produce up to 2500 kw per unit. They can be linked in multiple units for peaking, standby duty, or dead load pickup. S. K. HOWARD, DIRECTOR OF MARKETING, FAIRBANKS MORSE & CO., BELOIT DIVISION, BELOIT, WIS., can tell you all about them.

Lawn Mower Sharpener

208 A lawn mower sharpener that grinds both reel and bed knife of any reel-type mower while the mower remains fully assembled and in upright position is offered by FOLEY MFG. CO., 3300 N.E. 5TH ST., MINNEAPOLIS 18, MINN. Ideal for use by maintenance shops serving municipal parks, playgrounds, golf courses, cemeteries.

Packaged Field Compressor

209 *Bulletin* No. 101 describes the special features of Model AM-2 and AM-4 packaged field compressors, available in more than 25 models, from 100 bhp to 1100 bhp and with discharge pressures up to 6000 psi. Operating data included. Write THE COOPER-BESSEMER CORP., MOUNT VERNON, OHIO.

Controls Water Supply Tastes and Odors

210 An 8-page folder describes an efficient, economical technique for taste and odor control and iron and manganese removal from water supplies through use of Carox potassium permanganate. Write CARUS CHEMICAL CO., INC., 1375 EIGHTH ST., LA SALLE, ILL.

Portable Brushcutter

211 *Form* No. 218P supplies information on a one-man work gang that clears brush, weeds, and trees at low cost. Applications, specifications, accessories, general description included. For copy, write ROWCO MFG. CO., INC., 48 EMERALD ST., KEENE, N. H.

Steel Sewer Pipe

212 Sanitary sewer problems? Need a pipe that offers strength and top flow capacity? Perhaps ARMCO DRAINAGE & METAL PRODUCTS, INC., 6991 CURTIS ST., MIDDLETOWN, OHIO can help. Why not ask about Armco asbestos-bonded Smooth-Flo pipe?

Overhead Highway Sign Supports

213 *Engineering Catalog* BT-1 supplies 19 pages of background, specifications, engineering data on aluminum box truss sign spans for highway, railroad and allied applications. Available from PFAFF & KENDALL, 84 FOUNDRY ST., NEWARK 5, N. J.

Upgraded Police Cars

214 Some improvements in the 1962 Plymouth police vehicles include 7% better gas mileage, ability to surge to cruising speed as much as 10% faster, battery-saving alternator. For full story, write PLYMOUTH MOTORS, 6334 LYNCH RD., DETROIT, MICH.

Improve Office Efficiency

215 SMITH-CORONA MARCHANT, has prepared a booklet that tells how to control overhead costs in the office. It's called "50 Checkpoints to Help Improve Your Office and Personnel Efficiency." Address requests to PHOTOCOPY PRODUCTS, 410 PARK AVE., NEW YORK 22, N. Y. And ask for literature on the Vivicopy 12.

Time Switch for Traffic Controllers

216 *Brochure* No. 84 presents a new, one-dial, three-circuit program time switch for three-dial controllers that's been designed exclusively for traffic signal control. Explanation, features, advantages, etc., included. Write TORK TIME CONTROLS, INC., MOUNT VERNON, N. Y.

Tackles Snow-Clogged Driveways and Sidewalks

217 Designed to move snow, this 24-hp Kohler engine-equipped Bobcat clears a 4-foot wide sidewalk in one pass. It can be used to backfill trenches, pull gang mowers and trash carts, roll lawns or blacktop patches. For details, write WHITMAN & ROBINSON, WEEDSPORT, N. Y., or KOHLER CO., KOHLER, WIS.

Distributors for Trickling Filters

218 Rotoline distributors for trickling filters for high-rate biofiltration or standard-rate filtration for large or small plants are the subject of 15-page Book 2706, which includes specifications, dimensions, selection, characteristics, operation. Write LINK-BELT CO., PRUDENTIAL PLAZA, CHICAGO 1, ILL.

Cathodic Protection for Treatment Plants

219 This folder states the corrosion problem in water and sewage treatment plants, then goes into the how's, why's where's, benefits, and costs of ERP cathodic protection. Write ELECTRO-RUSTPROOFING CORP., BELLEVILLE 9, N. J.

Vertical Circulating Pumps

220 Self-priming and designed to deliver water in large volume, these pumps are ideal for cooling tower circulation, municipal primary water pumping, river intake, dewatering, etc. Available in capacities to 50,000 gpm. Write BYRON JACKSON PUMPS, INC., P. O. BOX 2017-A, TERMINAL ANNEX, LOS ANGELES 54, CALIF.

Renews Concrete Structures

221 An easy way to renew and repair concrete tanks, reservoirs, sewers, bridges, and other concrete structures economically and permanently is explained in literature available from INDIANA GUNITE & CONSTRUCTION CO., INC., 1734 HELTON ST., INDIANAPOLIS, IND.

Stump Removal Made Easy

222 There are five Pow-R-Stump Cutter models, each designed to rip out unwanted, ugly stumps in just minutes and without backbreaking labor. For complete information, write VERMEER MFG. CO., 1452 W. WASHINGTON, PELLA, IA. Ask about the Kansas City, Mo. experience.

Rotary Files

223 There are many types and sizes of power and manual rotary files and systems that are just right for municipal applications. Why not let ACME VISIBLE RECORDS, INC., 8612 W. ALLVIEW DRIVE, CROZET, VA., explain their benefits, applications, and operation?

Compact Drainer Pump

224 A new 2-inch, 93-pound electric drainer pump that can be used for drainage, dewatering or flooding is available with capacity range up to 180 gpm. Power source for Model 2D is either a 220-volt, 3-phase, 60-cycle motor or 230-volt, single-phase, 60-cycle motor. For details, write SUMO PUMPS, INC., BROWN HOUSE ROAD, STAMFORD, CONN.

Good Practice in Sewer Construction

225 This is one of a series of technical bulletins published by THE LOGAN CLAY PRODUCTS CO., LOGAN, OHIO. It illustrates and explains correct sewer construction procedure, points out how to prepare the trench, describes finishing, backfilling and inspection.

Got to Load It?

226 Want the job done quickly, economically, efficiently? Then you'll want the new booklet on Athey Force-Feed loads, year-round workhorses that load snow, windrowed or stockpiled materials, earth and sod while they reduce costs. Write ATHEY PRODUCTS CORP., 5631 W. 65TH ST., CHICAGO 38, ILL.

Rock Salt Facts

227 Interested in achieving safe, snow- and ice-free wintertime pavements in an efficient, economical way? Then why not let INTERNATIONAL SALT CO., CLARKS SUMMIT, PA., give you the facts about Sterling rock salt—its cost, effectiveness, etc.?

(See page 60 for more Bulletins)

BULLETIN: EARLY TABULATIONS SHOW NEW *FLEET-SIZE* LARK HAS WON ACCEPTANCE

'62 LARK FLEET ORDERS IN FIRST 3½ WEEKS–

State of Connecticut • Railway Express Company • Avis Rent-A-Car, Miami • Winnetka, Ill. Police Dep't. • State of Florida • Yellow Cab Co., Erie, Pa. • F. W. Means & Company • University of California • Norwalk Tire Company Northern Illinois Gas Co. • Firestone Tire & Rubber Co. • City of Cleveland, Ohio • Frenat Cab Co., New York National Cash Register • Santa Clara County, Cal. • Convair Division, General Dynamics • City of Milwaukee, Wis. American Cab Co., Kansas City • State of Minnesota

HERE ARE THE REASONS WHY THE NEW FLEET-SIZE LARKS ARE GOING PLACES IN '62

- **NEW 113" WHEELBASE,** 5 inches longer than Rambler Classic, gives luxurious ride and room . . . a bigger car than any other at the same price.
- **NEW INTERIOR DIMENSIONS** provide legroom comparable to Cadillac—over 6 inches more legroom than Plymouth, over 12 inches more than Corvair Monza!
- **NEW HEADROOM** in front is 40"—a full inch higher than the Fairlane. New headroom in back is 39½"—a full inch and a half higher than the Fairlane. (When we say "room for six-footers" we **mean it.)**
- **FLEET-PROVED POWER** in lively Six or choice of two V-8's—112 to 225 HP! Five body styles to choose from, with wide choice of trim, colors and options—the widest offered by any manufacturer!
- **NEW FINE-LINE STYLING,** a longer car with smart European design, wins quick acceptance with fleet-car drivers. Glamor-styled but taxi-tough!
- **GO-ANYWHERE STAMINA,** with high ground clearance—even on off-highway trails, The Lark takes the most beating with least complaint. Heavy Duty equipment is available on every model.
- **COMPACT SIZE PRICE TAG** on the Fleet-size Lark—only the first of many savings! Lowest maintenance and repair have been proved in Lark fleets across the country, for years. Endurance-built quality keeps operational costs low... keeps trade-in value right up among the top few makes!

new **'62 LARK**

BY STUDEBAKER

GET THIS VALUABLE INFORMATION RIGHT NOW! AC 12-62-2

Send me all the data on the '62 Fleet-size LARK.

Name__________

Title__________

Company__________

Address__________

City__________ Zone_____ State_____

Mail to: A. E. Fitzpatrick, Studebaker Fleet Department, South Bend, Indiana.

FREE catalogs

Write to address given or circle corresponding number on free post card on page 53.

Saves $50,400 Per Year

228 A fleet of 18 Hydro E-Z Packs, which picks up 9 million pounds of refuse per month, has made possible an increase in pickups of more than 50% and an annual savings of $50,400 for Jackson, Miss. For details, and a copy of "The Big Squeeze", write HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO.

Aid for Water Lines

229 Updated literature on several models of dependable air control valves designed to keep long water lines open for safe, efficient, economical operation, can be obtained by writing to MULTIPLEX MFG. CO., DEPT. E, HERWICK, PA.

Rotary Blowers and Gas Pumps

230 New *Bulletin* RAS-261 presents the line of rotary positive displacement blowers (Type RAS) and gas pumps (Type RGS) offered by ROOTS-CONNERSVILLE, BLOWER DIV. OF DRESSER INDUSTRIES, INC., 900 W. MOUNT ST., CONNERSVILLE, IND. Advantages are outlined; full data on performance and operating characteristics given. Capacities range from 1,500 to 30,000 cfm, working pressures to 12 psig, and dry vacuums to 15" Hg.

Clear Heavy Snows Fast

231 Extra-deep snowfall? High drifts? Windrowed snow need loading? Have to cast snow from bridges? Want to do these chores fast? Efficiently? Then you'll want to know about rotary Sno-Flyrs, big-capacity units that tackle heavy snows with ease. Write BROS, INC., ROAD MACHINERY (SNO-FLYR) DIV., MINNEAPOLIS 14, MINN.

Sweep Streets Really Clean

232 Las Vegas, Nev., has been realizing close to a 50% reduction in power sweeper broom costs by using Danline brushes, getting 2300-2500 sweeping miles at 7½ to 9 cents broom cost per mile. For details on Danline brooms, write NEWARK BRUSH CO., 260 KENILWORTH AVE., KENILWORTH, N. J.

Maintenance Paints

233 Equipment and plant coatings that last 25% to 50% longer arouse your interest? Then you'll want to receive a copy of "Why Silicone-Based Paints Mean Less Maintenance." It's available from DOW CORNING CORP., DEPT. 0724, MIDLAND, MICH.

Power for Municipal Waterfront Service

234 When you specify the Big Twin for tough municipal waterfront jobs, you specify an outboard engine that develops 40-hp at 4500 rpm, is easy to start, and always dependable. EVINRUDE MOTORS, 4143 N. 27TH ST., MILWAUKEE 16, WIS., can provide full details on this hard-working, load-lugging engine.

Solids Contact Precipitator

235 A 6-page folder describes in illustration and text the new Type M Precipitator, a sludge-blanket clarifier whose agitator arms are driven by water jets at the tip. Operating graphs show the unit's quick accommodation to changes in raw water makeup. For a copy, write PERMUTIT, 53 W. 43RD ST., NEW YORK 36, N. Y.

Sanitary Sewer Pipe

236 A-M reinforced concrete pipe with concrete and round rubber joints is designed to meet the problems that accompany unusual and difficult installations. How it does this is explained in literature offered by MARTIN MARIETTA CORP., CONCRETE PRODUCTS DIV., 101 E. ONTARIO ST., CHICAGO 11, ILL.

Small Sewage Treatment Plants

237 *Bulletin* No. 1510 presents small sewage treatment plants of the extended aeration type, designed for institutions, subdivisions, municipalities. Ten sizes from 3,000 to 18,000 gpd listed. The "Yeo-Wave" surface aerator, heart of the plant, is detailed. Write YEOMANS BROTHERS CO., 1999 N. RUBY ST., MELROSE PARK, ILL.

Self-Contained Dust Collectors

238 *Bulletin* 230 reports on self-contained air pollution control equipment developed for control and collection of industrial dusts in metalworking, woodworking and other operations. Functions, applications, construction features included. Write JOHN WOOD CO., AIR POLLUTION CONTROL DIV., FLORHAM PARK, N. J.

For More Water Try Horizontal Wells

239 If your community needs a new water supply, you should investigate the Ranney Method, using a large caisson with well points radiating horizontally from the base. A quick and easy way to do this is to send for the 24-page brochure "Supplying Water for Municipal and Industrial Use." Write RANNEY METHOD WATER SUPPLIES, INC., P. O. BOX 5445, 841 ALTON AVE., COLUMBUS 19, OHIO.

(See page 62 for more Bulletins)

MH Roll-call for water

When Wall Street, N.Y. Was Only a Stone Wall

After the Dutch bought Manhattan Island from the Iroquois Indians, they built a stone wall across the island to prevent possible attack by the English. That military barrier, built 308 years ago, is known today as Wall Street and is the financial center of the United States. Around it stands one of the largest cities in the world!

What a change has taken place in 300 years! This one time wilderness—now three Middle Atlantic States—has become one of the most heavily populated and one of the wealthiest sections of the country. It has great factories and industries, educational institutions, famous pleasure resorts, rich agricultural districts, modern hospitals. It has 85 domestic water distribution systems, each serving 25,000 or more consumers. Some of them are the largest and most modern water works systems in the Nation. But—authorities rate only 40 of them as adequate, 25 as of doubtful adequacy and 20 of them as deficient in capacity!

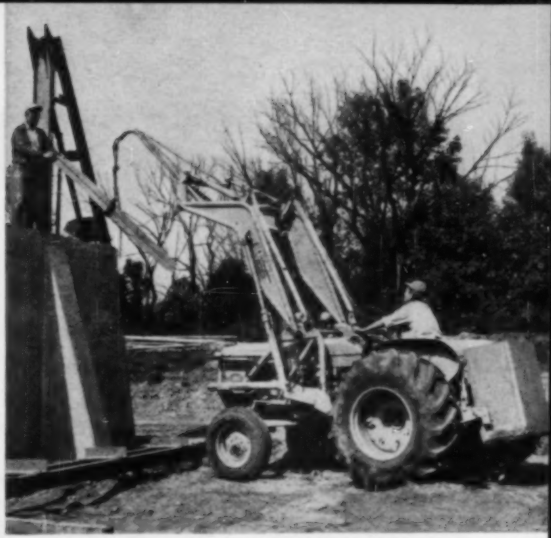
When an Iroquois Indian needed more water, he just moved his camp. Today's white man must improve his water distribution system to bring more water to him.

Middle Atlantic States
New York
New Jersey
Pennsylvania

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

ONE OF THE DRESSER INDUSTRIES

No pecking, no scratching, no useless poking at hard-packed earth! Tough, won't-quit International 460 heaps the bucket seconds-fast!



Swap the loader bucket for a crane, using same lift arms, and you are quickly equipped to handle another type of work.

Handle bulky objects or palletized materials with easily interchanged fork lift.

Handy, husky hustler!

With 61 hp and stamina to match, you never need to "ease up" with an International® 460*

From tough steel plate radiator grill to extra-sturdy final drive, the 460 is ruggedly built for heavy-duty service. Smooth 6-cylinder power easily fills the bucket with 2,500-lb loads. Excellent power-weight balance gives traction for 6,485-lb push-or-pull power.

Power steering enables your operator to steer with one hand, freeing the other to operate equipment controls. Pivot turning allows operation in confined quarters. These features, plus Fast Reverser, help produce more cycles per hour.

Cut job costs still more with fuel-saving Multi-Range power. Heavy-duty gasoline or Diesel engines go all out to move heavy loads, yet loaf on the lighter tasks to save you money.

Stretch the number of jobs you can do per day by switching to the hustling International 460. See your IH dealer for details.

**Maximum engine horsepower at standard conditions*

PARTS and SERVICE EVERYWHERE
5,000 dealers backed by 12 parts depots

INTERNATIONAL HARVESTER

NEED
FAST
DELIVERY
on
FINE CASTINGS

NF

(WE HAVE 15,000 PATTERNS READY)

NEENAH FOUNDRY COMPANY
NEENAH • WISCONSIN

Chicago office: 5445 N. Neva Ave., Chicago 31

Your City Can Improve Services and Reduce Costs

...by taking advantage of the improved municipal equipment offered below.

Write to address given or circle corresponding number on free post card on page 53.

This Tractor Likes Variety

240 Got to clean a lakefront? Operate a sanitary landfill? Trim trees? Patch a street? Stockpile loads? These are only a few jobs where a 66½-hp Model 55A Michigan can save time, money and problems for municipalities. For details, write CLARK EQUIPMENT CO., CONSTRUCTION EQUIPMENT DIVISION, 2495 PIPESTONE ROAD, BENTON HARBOR 44, MICH.

From Incinerators to Street Flushers

241 This booklet will acquaint you with the products and services of HAGAN INDUSTRIES INC., 53-09 97TH PL., CORONA 68, N. Y., which range from municipal incinerators to street flushers, rubbish-collection units to catch basin emptier, earth moving projects to power plants.

Cone Valve Primer

242 *Bulletin* 02B9255 offers 64 pages of valuable information on the uses, construction, advantages, characteristics and operation of the Rotovalve, designed to meet virtually any fluid control problem. In water works and industrial applications it handles water, oil, gas, steam and sewage. Write ALLIS-CHALMERS, HYDRAULIC DIVISION, YORK WORKS, YORK, PA.

Cures, Hardens, Seals Concrete

243 AIA File B-3, released by PROCO, INC., 3103 N. ASBURY, ST. PAUL 12, MINN., describes a chlorinated rubber expoxy formula that offers complete protection for *new* concrete in one application and effectively stops erosion effects of exposure on old concrete. Information on Polycoat, a new concrete pipe treatment, is also available.

Street Light Maintenance Truck

244 The Lamplighter can be used for both street and traffic light maintenance. It allows the operator to go from vehicle directly to work platform without stepping into street. TELSTA CORP., 2900 SPRING ST., REDWOOD CITY, CALIF., states that the Lamplighter produces the lowest unit costs for street light maintenance with greatest safety.

Easy Traffic Sign Assembly

245 A full-line of signing materials can be at your finger tips in shop or on job site, making sign assembly to specifications both easy and economical. Pre-cut aluminum cutouts make it possible. Ask for free detailed catalog. Write THE MIRO-FLEX CO., INC., 1842 E. SECOND ST., WICHITA 14, KANS.

Power for Water Plant Service

246 *Bulletin* SA-631 provides introduction and particulars on natural gas, LP gas, and gasoline engines in the 60- to 600-hp class that provide excellent low-cost power for sewage and water treatment plants. For copy, write CLIMAX ENGINE MFG. CO., DIVISION OF WAUKESHA MOTOR CO., CLINTON, IOWA.

Scout Prepares for Snow Removal Duty

247 A straight blade snow plow attachment with 6½-foot over-all length clears a 65 to 70-inch path in operating position. Designed for the Scout, IH's all-purpose utility vehicle, it's offered with a choice of two hydraulic mechanisms. Controls are dash mounted. Write INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

Trucks Stop, Start Frequently?

248 The 16-page brochure, "Stop and Go Diesels," describes 11 models available from 70 to 160 horsepower, explains why these units have longer engine life, cut maintenance costs, rack up savings for trucks subjected to in-city stop-and-go traffic conditions. Write CUMMINS ENGINE CO., INC., COLUMBUS, IND.

Accumulates Waste Treatment and Pollution Data

249 DOW INDUSTRIAL SERVICE, DIV. OF THE DOW CHEMICAL CO., 20575 CENTER RIDGE RD., CLEVELAND 16, OHIO, announces a pilot plant designed to analyze municipal wastes and test the effectiveness of indicated treatment prior to investment in full-scale treatment. Produced as a "package" unit, it may be purchased or leased.

Two-Stage Centrifugals

250 In *Bulletin* 722.6, GOULD PUMPS, INC., 227 BLACK BROOK RD., SENECA FALLS, N. Y., supplies complete information, performance curves, material specifications, interchangeability charts and dimensions, on its new Model 3305-06 two-stage centrifugal pumps with capacities to 3000 gpm for heads up to 550 feet at 1750 rpm.

Gasoline-Powered Boring Unit

251 Subject of new 4-page bulletin released by the KWIK-MIX CO., PORT WASHINGTON, WIS., is the Ka-Mo G-16, a gasoline-powered earth boring unit for drilling 2¾ to 12-inch holes. Performance advantages, description of major components, and a capacity chart, showing length and diameter of holes to be drilled with the G-16, are included.

Steel Pipe

252 *Catalog* B-1A supplies facts on welded and galvanized steel pipe, points out municipal applications, provides information on fittings and connections, accessories, protective coatings and linings, engineering data included. Write THOMPSON PIPE & STEEL CO., 30TH AND LARIMER STS., DENVER 1, COLO.

Measurement Control Meter

253 *Technical Bulletin* 729 describes the Simplex Type "L" pneumatic meter, which incorporates a pneumatic receiver to take any form of pneumatic signal. Advantages, special features, specifications and illustrations given. Write SIMPLEX VALVE AND METER CO., 7 E. ORANGE ST., LANCASTER, PA.

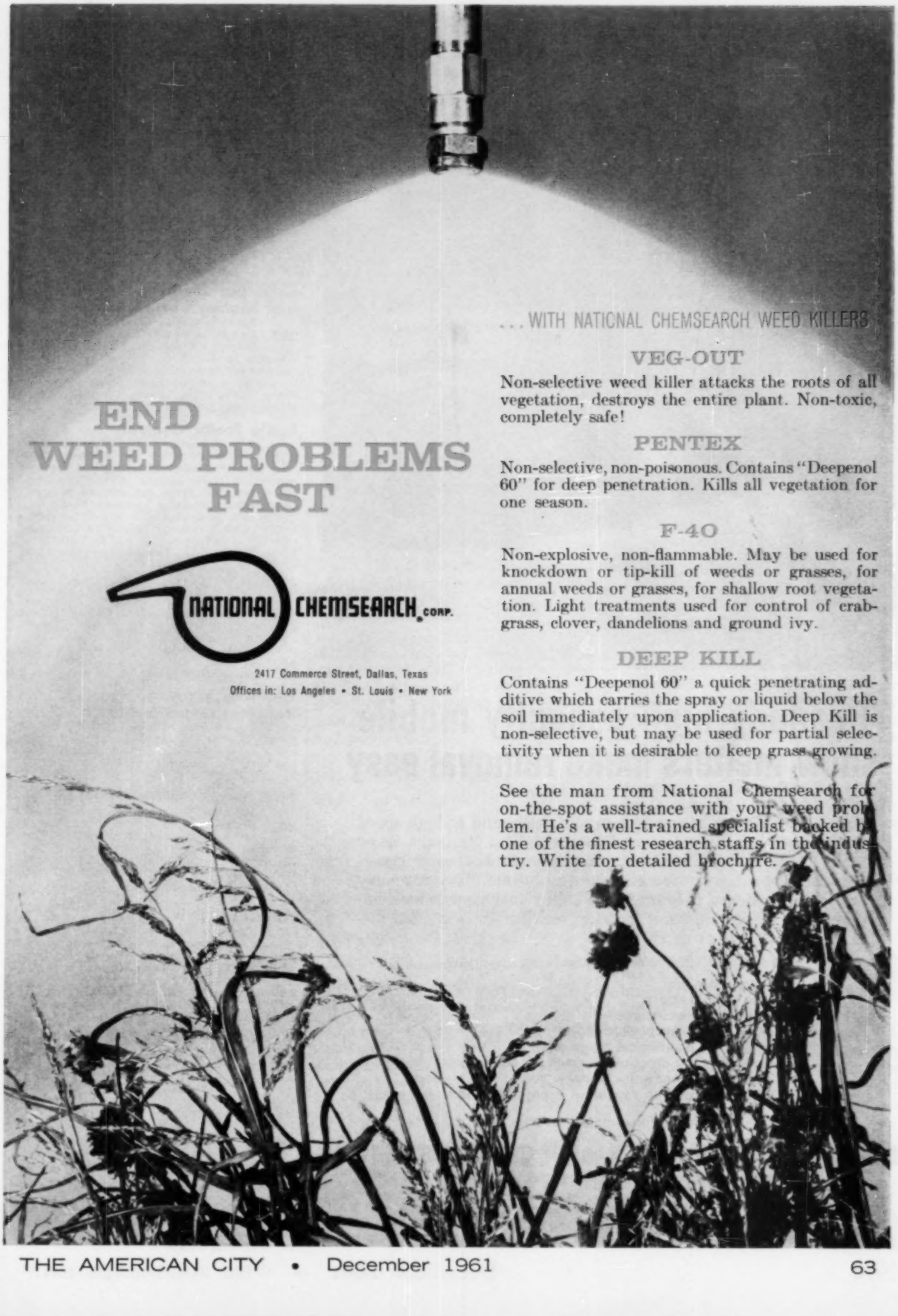
Cleans Sewer Lines

254 By writing to SHUR-KLEEN PIPE CLEANERS, INC., BOX 1678, PLAINVIEW, TEXAS, you can obtain literature explaining a sanitary method of cleaning sewer lines based on manhole to manhole operation. Diagrams of technique included along with list of municipal users.

Die Embossed Traffic Signs

255 Traffic signs alert and instruct the driver. But to do so effectively they must first be clearly seen. Die embossing gives traffic signs an extra measure of visibility by adding the depth dimension. For facts, write GRIMM STAMP & BADGE CO., 8105 ROSALIE AVE., ST. LOUIS 17, MO.; GOPHER STAMP AND DIE CO., CHICAGO AVE. and CUSTER ST., ST. PAUL 7, MINN.; MIRO-FLEX CO., INC., 1824 E. 2ND ST. (BOX 514), WICHITA 14, KANS.; VULCAN SIGNS AND STAMPING DIVISION, P. O. BOX 1069, BIRMINGHAM, ALA.; LYLE SIGNS, INC., 2720 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.

(See page 64 for more Bulletins)



END WEED PROBLEMS FAST

NATIONAL CHEMSEARCH CORP.

2417 Commerce Street, Dallas, Texas
Offices in: Los Angeles • St. Louis • New York

...WITH NATIONAL CHEMSEARCH WEED KILLERS

VEG-OUT

Non-selective weed killer attacks the roots of all vegetation, destroys the entire plant. Non-toxic, completely safe!

PENTEX

Non-selective, non-poisonous. Contains "Deepenol 60" for deep penetration. Kills all vegetation for one season.

F-40

Non-explosive, non-flammable. May be used for knockdown or tip-kill of weeds or grasses, for annual weeds or grasses, for shallow root vegetation. Light treatments used for control of crabgrass, clover, dandelions and ground ivy.

DEEP KILL

Contains "Deepenol 60" a quick penetrating additive which carries the spray or liquid below the soil immediately upon application. Deep Kill is non-selective, but may be used for partial selectivity when it is desirable to keep grass growing.

See the man from National Chemsearch for on-the-spot assistance with your weed problem. He's a well-trained specialist backed by one of the finest research staffs in the industry. Write for detailed brochure.

Melt your next snow storm
down the drain!

PEABODY ENGINEERING CORPORATION
SNOW MELTER

Peabody high capacity mobile snow melters make removal easy

Now heavy snow falls can be removed easily and at high speed from streets, parking lots and airports. The Peabody Snow Melter utilizes a direct-contact closed-circuit hot water generator fired by a fully automatic light oil burner. The extremely hot water produced is formed into high velocity jets which impinge on and agitate snow, quickly melting it. It is then discharged to sewers or catch basins.

The Peabody Snow Melter offers these features:

- Fully automatic
- Rapid snow removal
- Truck or trailer mounted
- Efficient (approaching 100%)
- Simple and economical to operate
- Sanitation and other trucks freed for regular jobs
- Truck renting and snow haulage problems eliminated
- Safe operation—no dangerous exposed flames or hot gases

Write today for complete information.

PEABODY ENGINEERING CORPORATION
232 MADISON AVENUE, NEW YORK 16, N.Y.

OFFICES IN PRINCIPAL CITIES

SUBSIDIARIES
In England: PEABODY LIMITED In Canada: PEABODY ENGINEERING CORPORATION OF CANADA LTD.

1-288

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Handles a Variety of Jobs

256 A 1¼-yard machine that offers a choice of power and optional buckets, accommodates pick-up sweeper, blacktop spreader, backhoe and Drott 4-in-1 bucket, is also easy to operate and service, and works the year 'round. Ask THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL., for bulletin of the Model H-30B.

Concrete Bonding and Sealing Compound

257 *Technical Bulletin* #20 supplies information on Chemweld, which bounds old concrete to old and new concrete to old, as well as dissimilar materials to old concrete surfaces. Bonds can be made when one or more surfaces are damp. For copy, write THE KELLEY PAINT CO., LOUISVILLE 10, KY.

Radio Traffic Control

258 A new medium-capacity expandable system designed for efficient, economical interconnection and central control of traffic signals in medium-sized cities, suburban areas and sections of large metropolitan areas is the way *Form* No. TIC-1433-B describes the Motorola radio traffic control system. Write MOTOROLA COMMUNICATIONS & ELECTRONICS, INC., 4501 AUGUSTA BLVD., CHICAGO 51, ILL.

Self-Closing Waste Receptacles

259 Litter-Tainers are sturdily-built receptacles designed to hold more trash and litter better. Available in two sizes, they can be used both outdoors and indoors. For literature, write D. J. ALEXANDER CORP., 2944 E. VENANGO ST., PHILADELPHIA 34, PA.

Highway Marking, Reflectorization Guide

260 Pocket-sized *Catalog* JP-L contains 52 fact-filled pages of traffic marking materials and equipment, many new for 1962. For a copy, write PRISMO SAFETY CORP., HUNTINGDON, PA.

Fire Alarm Control Panel

261 Bulletin A-130.51 introduces control panel MCN, a single circuit panel with coded transmitter designed for automatic fire detection and alarm systems. Application, general and technical descriptions, features included. Write NOTIFIER CORP., 3700 N. 36TH ST., LINCOLN 4, NEBR.

All-Wheel Drive Trucks

262 The new M-4 Series trucks are designed primarily for heavy-duty snow removal work by municipal street department crews. They've been field-tested and include many new features. For details and specifications, write OSHKOSH MOTOR TRUCK, INC., 2300 OREGON ST., OSHKOSH, WIS.

Cean, Clear Water at Less Cost

263 JOHNS-MANVILLE, BOX 325, NEW YORK 16, N. Y., reports that you can get cleaner, clearer, more sparkling water using ¼ the housing space with Celite filter aids. For diatomite water filtration study (#FA-74A), address WATER ENG. DEPT.

Water Service Products

264 Descriptive literature from HANDLEY INDUSTRIES, INC., 901 BELDEN RD., JACKSON, MICH., talks of telescoping, noncorroding curb boxes; a water "Meterminder" that puts an end to costly call backs, and roadway valve boxes that telescope to reduce damage by vehicles to valves and mains.

Mixing and placing a Cationic Bitumuls "mat" with a Moto-Paver. Note how closely the roller follows the paver.

CATIONIC BITUMULS NOW USED BY 21 STATE HIGHWAY DEPARTMENTS

Here's why:

1. **Fast Initial Set even in adverse weather.**
2. **Better Adhesion even with "hard-to-coat" stone.**
3. **"Rain-Proof" Coating of Aggregate (resists wash-off in sudden showers.)**

Since 1958, when we first introduced Cationic Bitumuls, it has gained steadily in acceptance by State Highway Engineering Departments all across the nation. Now, in twenty-one of our fifty states this material is in actual use. It is being tested and evaluated by many more.

Here's how one State took to Cationics

In 1958, The State Highway Commission of North Carolina took delivery of 100,000 gallons of Cationic Bitumuls so that one of their fourteen Divisions could do experimental work. When the results were evaluated here's what they found:

1. Early rains didn't damage the work.
2. The roads could be opened to traffic sooner.
3. The surfaces held more cover stone.

Based on these performance reports, the Commission made Cationic material available to all fourteen Divisions. In 1959, they used a total of 4,000,000 gallons. Last year (1960) 8,500,000 gallons!

How Cationic Bitumuls is used in North Carolina

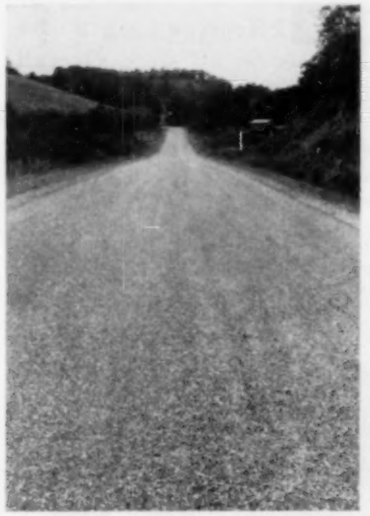
North Carolina uses Cationic Bitumuls for two basic types of work: Split Seal, Drag Seal (Double Surface Treatments), Single Seal, Triple Surface Treatments; and Moto-Paver Mixes. Aggregates used vary from one area to another but the principal ones are gravel, granite, slate and limestone. Cationic Bitumuls performs uniformly well with all of these.

Cities, too, adopt Cationics

Many cities in North Carolina have switched to Cationic Bitumuls for much of their street and road work, profiting by the experience of the State Commission.

This same process is going on all across the country as more and more engineers become familiar with the high-level performance of Cationic Bitumuls.

If you have not had an opportunity to check a Cationic Bitumuls job in person, call our nearest office. A Bitumuls Engineer will arrange for you to visit a job near you.



This is a completed Cationic Bitumuls Drag Seal Job.

North Carolina forces apply cover aggregate to a Cationic Bitumuls Split Seal on 8.1 miles of State Highway.

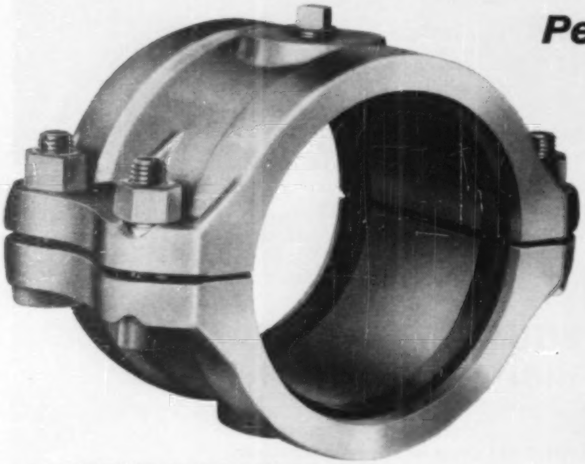
American Bitumuls & Asphalt Company

320 MARKET ST., SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

NEW CLOW

Ductile Iron Split Sleeve



ASSEMBLED IN 3 EASY STEPS

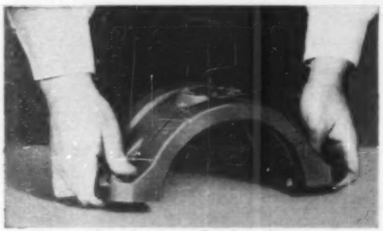
Permits easier, quicker, permanent repair of 4", 6" & 8" transverse cast iron pipe underground breaks

LIGHT WEIGHT Assembled 4″ diameter sleeve weighs but 26 lbs. Weight of 6″ sleeve is 32 lbs., 38 lbs. for 8″ sleeve.

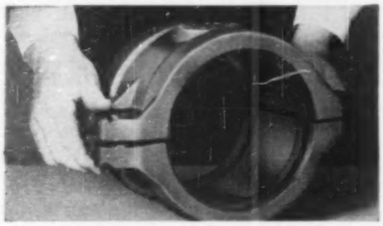
SHORT LENGTH Effective length of 4 inches between end seals on all sizes. Overall length is 6¼″.

TWO-PIECE ASSEMBLY No end glands. Side and end gaskets are pre-assembled and cemented in sleeve grooves.

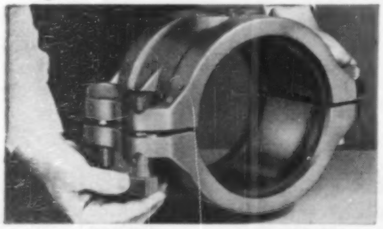
HIGH STRENGTH All parts are high tensile and corrosion-resistant. Sleeve halves are 70,000 psi tensile ductile iron. Nuts and bolts are high strength, corrosion-resistant alloy.



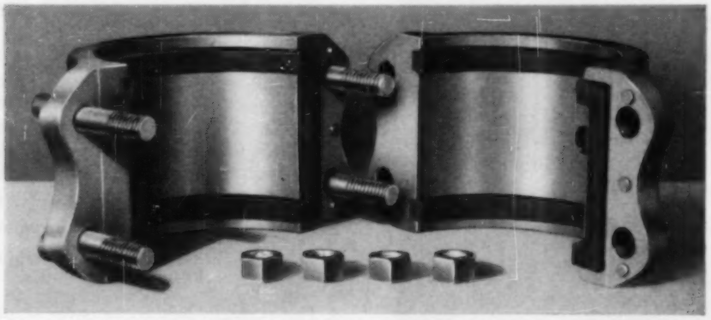
Once the damaged pipe is uncovered, one half of the sleeve is placed on each side of the pipe.



Sleeve halves are drawn together. Pre-assembled rubber gaskets make tight seal.



After the bolts are taken up finger-tight, tightening the four bolts by wrench completes assembly.

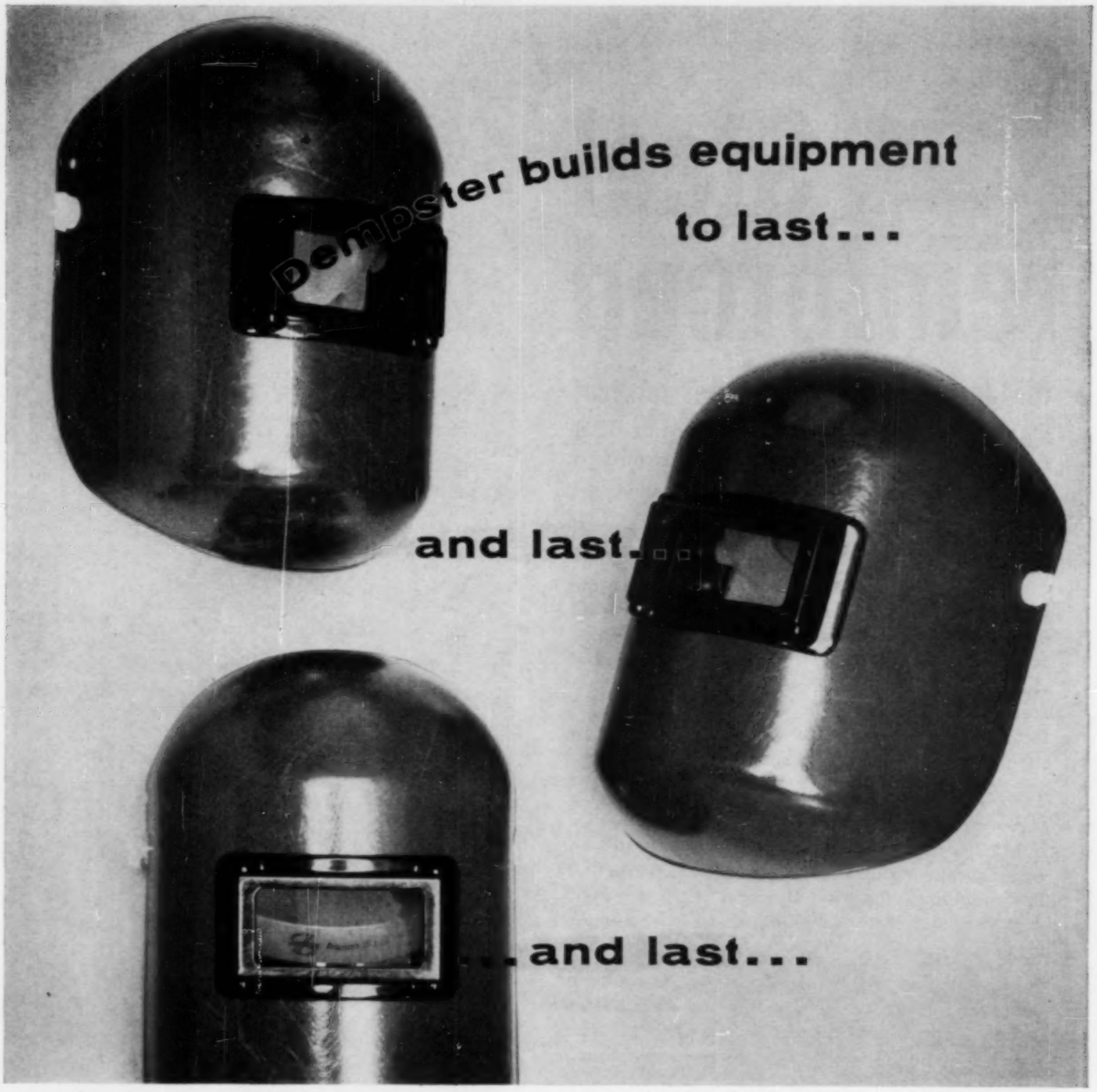


HERE'S ALL THERE IS TO IT! Illustration shows two-piece glandless construction. Side gaskets overlap ends of circumferential gaskets for tight seal. Four bolts are only accessories. Tapping boss on each half allows maximum tap of 2 inches. Regularly furnished with one sleeve-half tapped for ¾″ pipe.

JAMES B. CLOW & SONS, INC.

201-299 North Talman Avenue • Chicago 80, Illinois

Subsidiaries:
Eddy Valve Company, Waterford, New York
Iowa Valve Company, Oskaloosa, Iowa

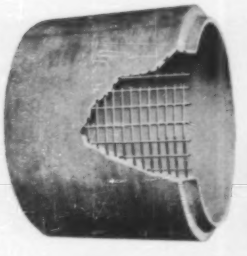


How long will it last? This is the question every city official must ask when he buys equipment, because *true* annual cost consists of initial price, plus total maintenance and operational costs, divided by the number of years it retains its efficiency. Many cost-conscious officials know that many pieces of our equipment are still efficient after 25 years of service.

DEMPSTER BROTHERS
Inc.
KNOXVILLE 17, TENNESSEE

Write Dept. AC-12
for your copy of
Catalog Brief 160

THE
DEMPSTER
DUMPSTER®
SYSTEMS



Steel reinforced

for longer life in storm sewer service!

Concrete pipe reinforced with strong USS American Welded Wire Fabric solves drainage problems.

Albuquerque, like most southwestern cities, is spreading out. You see new construction almost everywhere you look. This photograph shows some of the activity that goes into transforming the wide open countryside into new residential areas. It was taken in the North East Heights development and shows the laying of reinforced concrete pipe for a storm sewer. In this project, approx. 17,000 lineal feet of reinforced concrete storm sewer pipe from 24″ dia. through 72″ dia. was laid.

The pipe shown is 72″ pipe, and every foot of it was *steel-reinforced* with USS American Welded Wire Fabric to give it the strength and durability to withstand heavy loads and assure long service life. It was pre-tested to meet the rigid requirements of ASTM Specifications C76-57T, and will withstand loads exceeding 100,000 lbs.

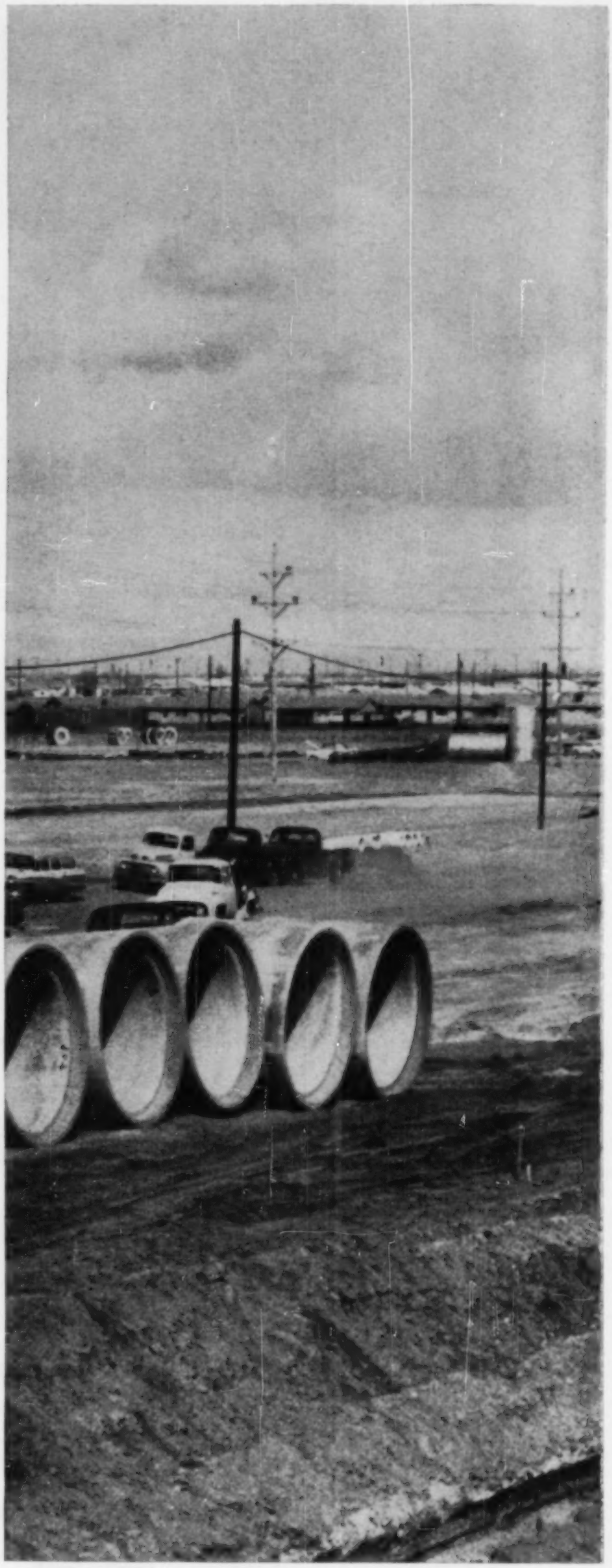
A large number of concrete pipe manufacturers are using USS American Welded Wire Fabric to get greater strength and durability. This quality wire fabric is made on precision machines to the closest of tolerances ±0.003″—with center to center spacings held to ¼″. It is prefabricated from cold-drawn, 60,000 psi min. yield strength wire. All intersections are electrically welded to assure positive mechanical anchorage in the concrete. For more information about USS American Welded Wire Fabric—write American Steel and Wire, Dept. 1457, Rockefeller Building, Cleveland 13, Ohio.

USS and American are registered trademarks

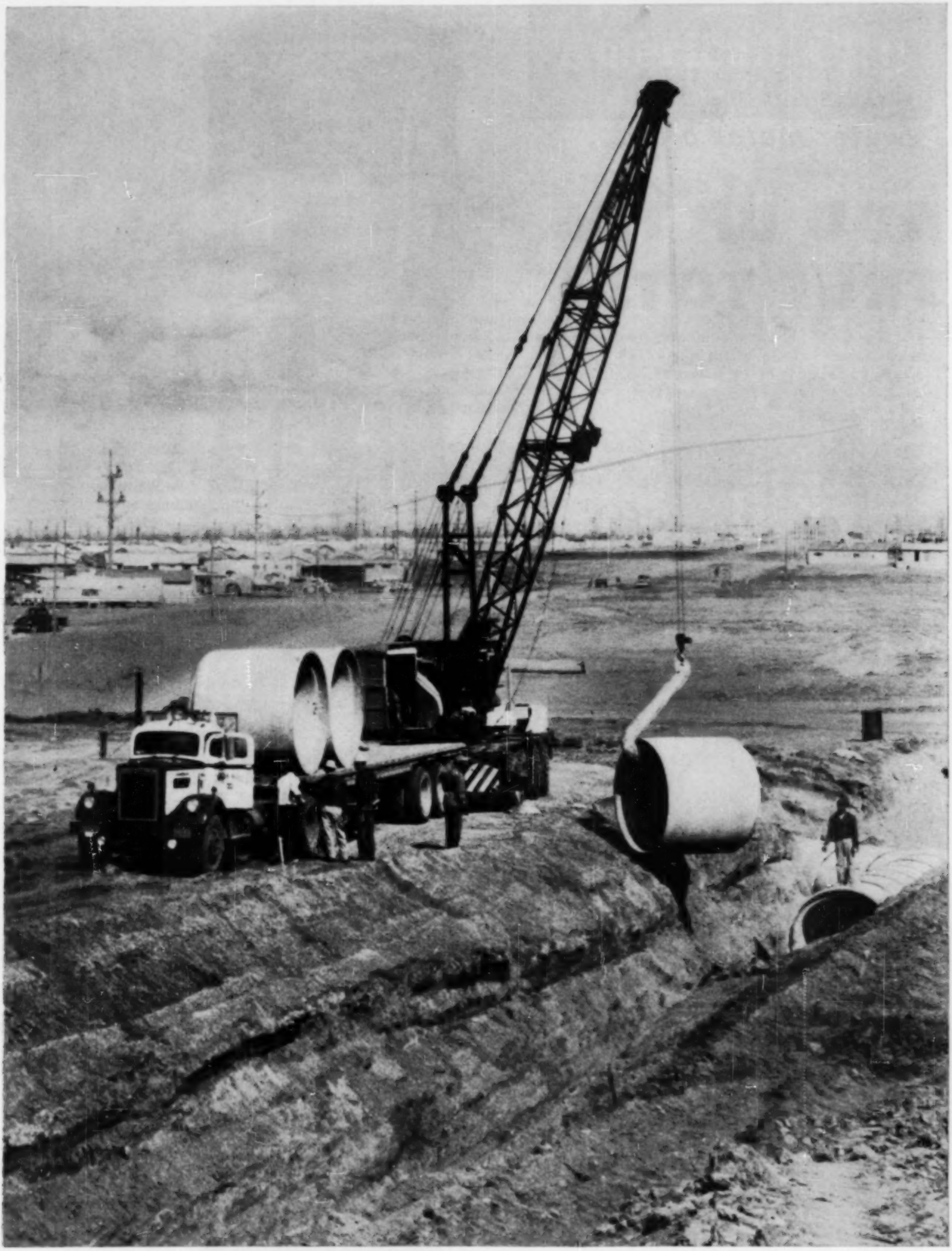
USS

American Steel and Wire
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad



Project: Storm Sewers, North East Heights, City of Albuquerque, N.M. **Engineers:** Gordon Herkenhoff & Associates. **Contractor:** C. R. Davis Contracting Company. **Product:** Reinforced Concrete Pipe ranging in size



from 24" to 72" dia. Reinforced with USS American Welded Wire Fabric.
Manufacturer: Pipe by American-Marietta Corporation. Reinforcement by American Steel and Wire Division of United States Steel.

This mark tells you a product
is made of modern, dependable Steel.

When you open the water meter bids...

ADD UP THE TRUE TOTAL

BID PRICE

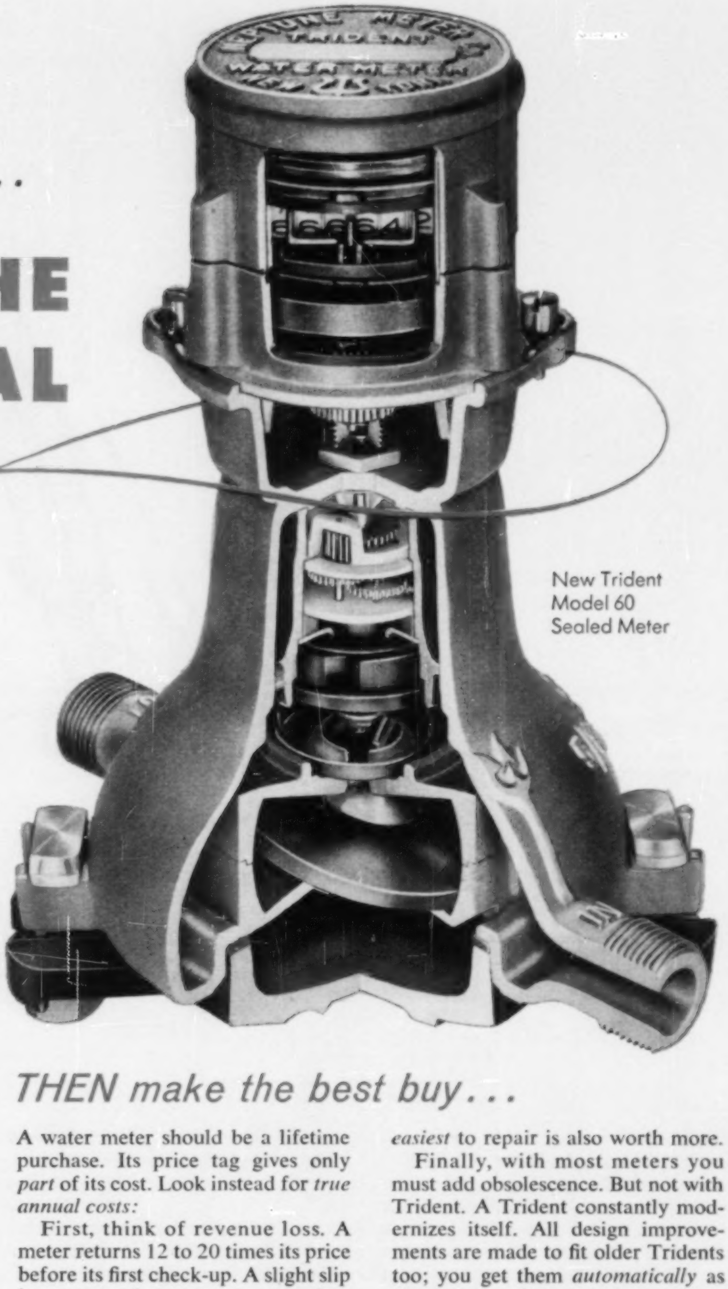
+

OTHER COSTS:

Revenue losses

Repairs

Obsolescence
(if any)



New Trident
Model 60
Sealed Meter

THEN make the best buy...

A water meter should be a lifetime purchase. Its price tag gives only *part* of its cost. Look instead for *true annual costs:*

First, think of revenue loss. A meter returns 12 to 20 times its price before its first check-up. A slight slip in accuracy loses more money than you "save" in a low bid.

Secondly, meters must be tested regularly. One that checks OK *without* repairs obviously is worth more. In the long run, the meter that is *easiest* to repair is also worth more.

Finally, with most meters you must add obsolescence. But not with Trident. A Trident constantly modernizes itself. All design improvements are made to fit older Tridents too; you get them *automatically* as you insert replacement parts.

Trident meters are designed not for low bid but for low true annual cost. That's why Trident is always your "best buy."

Ask your Neptune representative.

neptune
METER COMPANY

LIQUID METER DIVISION • 47-25 34th Street, Long Island City 1, N. Y.
OFFICES IN PRINCIPAL CITIES • In Canada: Neptune Meters Ltd., 1430 Lakeshore Rd., Toronto 14, Ont.

DECEMBER 1961

The
American City

A Do-It-Yourself Christmas Tree

Bethlehem, Pa., the Christmas City, has a most unusual but strikingly beautiful 51-foot Christmas tree. This well proportioned giant is literally a do-it-yourself project which can't be distinguished from the real thing.

The architectural design begins to take shape with the construction of a wooden framework around a concrete pylon. The framework consists simply of five wooden platforms bolted together so that they may be taken apart for storage and future use. These rings range in diameter from 15 feet at the base to 5 feet at the top. They are spaced an average of 6 feet apart.

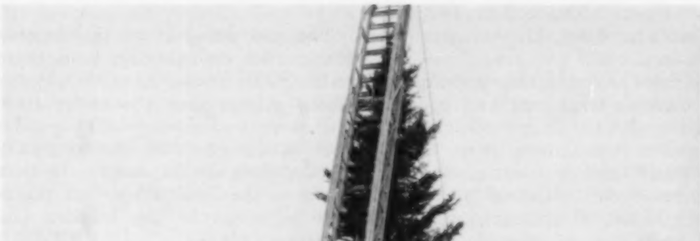
A perfectly shaped 16-foot Norway spruce crowns the tree. Spruce trees, 12- to 14-feet tall, are attached to the lower rings. Approximately 105 evergreens make up the finished product.

A total of 3,000 blinking colored lights adorn the fabricated masterpiece. A star-shaped cluster of 69 lamps radiates from the very top of the tree.

Trees from the city's 10,000-acre Wild Creek Watershed supply the necessary construction material. Only selected and marked trees are cut from the watershed's dense plantations.

A dual purpose is served with this thinning operation. The snow-holding capacity of the stand and the water yield are increased, spring planting of additional seedlings assures the city of an ample tree supply in the future.

This do-it-yourself Christmas package has proven to be a true "gem" for Bethlehem. It has not only reduced the cost of holiday decorating but serves as a worthwhile conservation measure as well. ◄◄



Bethlehem's do-it-yourself Christmas tree begins to take shape with the aid of a fire-department ladder truck.

The finished product stands all aglow with 3,000 lights above the holiday onlookers.

The booster pumping, control and treatment building is in the foreground, the prestressed reservoir on the hill.

One Operator Does Everything

. . . in this automatically controlled water-treatment plant serving the City of Redding, Calif.

By **RICHARD H. WARD***

When Redding, Calif., added a booster station and modernized the treatment facilities two miles from the river intake, city officials decided to install automatic controls so that one plant operator could perform all duties. Ray E. Layton and Associates, consulting engineers, recommended this plan over the non-automatic alternative of two operators because of the safeguards realized with an automatic control system.

One plant operator now performs the routine operational functions, tests and maintenance in half a day. The remaining hours he devotes to repair and testing of water meters in the well equipped and spacious shop located in the same room which houses the automatic-control equipment.

In 1938, the city of Redding acquired the water system from a private utility which had maintained low water rates. Unfortunately, the service and water quality followed the same level. Continued low rates prohibited the establishment of a minimum maintenance and improvement program.

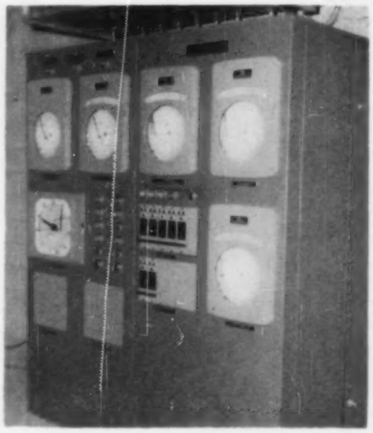
After a comprehensive survey of the system's present and future needs, the voters, in 1957, authorized a $1,250,000 bond issue to improve the facility to an adequate level. They understood in so doing that their water rates would double. The new monthly rate includes a $1.50 minimum charge for quantities up to and including 500 cubic feet. The next 500 cubic feet cost 20 cents per 100; the next 3,000, 15 cents per 100; and all over 4,000, 11 cents per 100 cubic feet.

We have constructed a combination control, treatment and booster pumping station; improved a 2,000,000-gallon flocculation basin, added a 2,000,000-gallon prestressed-concrete reservoir (bringing total storage to 12,000,000 gallons); and laid 18- and 20-inch American prestressed transmission lines. Other improvements include:

- **An additional 400-hp, 4,500-gpm Layne and Bowler turbine-type pump.**
- **New Chapman check valves.**
- **Cla-Val and Bailey pump control valves.**
- **Pelton surge suppressors for all pumps.**

The new pump at the Sacramento River inlet brought the total there to five, with a capacity of 15,000 gpm. These pumps suck the water from the river and propel it two miles horizontally and 300 feet vertically to the flocculation basin. It then flows to the 7,000,000-gallon reservoir adjacent to the booster and treatment plant.

A B-I-F system controls the entire operation. Pumps receive instructions from the reservoir water level. A Chronoflo transmitter sig-

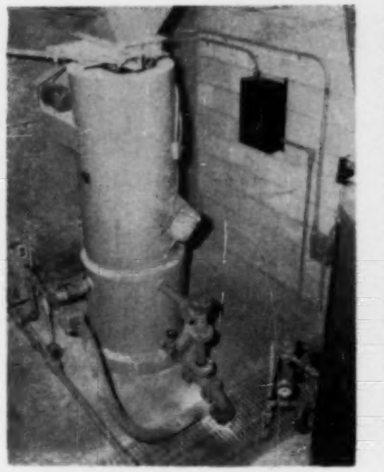


The treatment plant's control panel is a plant operator's dream.

Completely automatic operation typifies the pre-chlorinator.

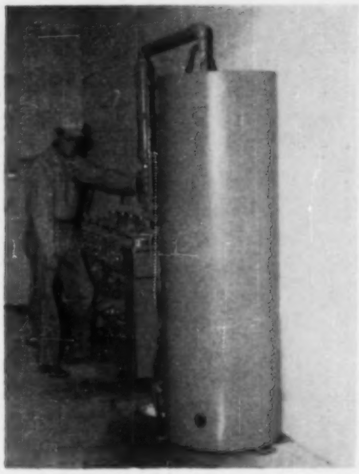
---

* Mr. Ward is now a consulting engineer in Turlock, Calif. He resigned the position of city engineer in Redding shortly after the completion of the modernization program described herein.



Automatic signals adjust the amount of lime as the rate of flow changes.

The effectiveness of the treatment processes is tested in this lab.



Testing and repairing meters consumes a good deal of the operator's day.

nals the reservoir level to the control panel receiver-recorder. At predesignated water levels this unit starts and stops the five river pumps in various sequences controlled by an Autocon alternator. The pump control signals rush to the station over a pair of leased telephone wires by virtue of six paired B-I-F Synchroscan tone transmitters and receivers. Five circuits control the pumps and the sixth reports failures or malfunctions which might occur at the river pumping station.

Feeders

Back in the control-and-treatment building two miles away a McDonnell & Miller vane switch placed in the 24-inch raw-water transmission line running adjacent to the building, initiates and stops pre-chlorination and lime-feeding operations. A Wallace & Tiernan V-notch chlorinator, regulated by a Wallace & Tiernan residual recorder-controller, prechlorinates the water from the reservoir.

Alum is fed to the water in the usual manner for flocculation. When the water does not require this process, we continue feeding lime, to inhibit corrosion, because the raw water is so soft and of such low pH that it falls in the —2.5 range of Langlier's index of corrosiveness. A B-I-F Omega lime feeder begins operation when it is notified by the vane switch. An interval timer controls the feed rate, adjusting it to conform to the operating pumps' pretested capacities and the predetermined lime requirements.

We require flocculation only during the late winter months and after heavy rains. A Wallace & Tiernan alum feeder receives orders from a Beckman photo-electric turbidity colorimeter in conjunction with a Bristol turbidity recorder-controller. When the turbidity of the raw water reaches 6 ppm, the alum feeder begins to operate, feeding at a rate set by the same interval timer and in a manner comparable to the lime-feeder operation.

Post-chlorination of the treated water results from the action of a Wallace & Tiernan V-notch chlorinator. A transmitter attached to a 24-inch flow tube signals the proper amount of chlorine to be distributed. The new plant building includes two Peerless 150-hp, 2,500-gpm centrifugal booster pumps with space for two more when the demand warrants. These pumps and the 2,000,000-gallon prestressed-concrete reservoir serve a second pressure zone and replace five smaller boosters which we formerly operated manually. The remote locations of these old boosters scattered about the hillside area caused a great deal of travel and resulted in a waste of the operator's time. The Peerless Pumps now operate when the water level in the new prestressed reservoir falls below certain levels. A B-I-F transmitter and receiver-recorder control pump performance.

Laboratory

We included a well equipped laboratory in the new building. The operator conducts the routine daily tests which include chlorine residual and turbidity to verify the accuracy of the turbidimeter and chlorine residual recorder.

We also boast of the following additional facilities:

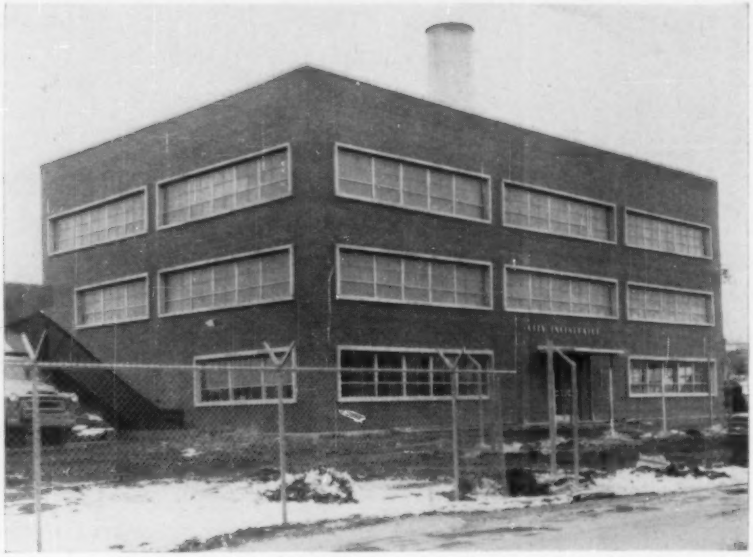
- **A locker room and shower for the plant operator.**
- **A 40-ton storage room for alum and lime.**
- **A chlorine storage room to house five one-ton cylinders.**
- **Floor-level chemical-feeder hoppers with forced-draft dust collectors.**
- **Electric heating and air conditioning.**
- **Time clocks which start the pumps at the time of least electrical demand.**
- **An alarm system with a local daytime alarm and a remote after-hours alarm at the police station.**
- **Sufficient signal lights and automatic shut-downs to detect and define trouble instantly and to protect the equipment from damage.**
- **A meter cleaning and washing sink, repair bench, and Badger test bench.**

We can easily and cheaply expand as needed to serve a population of 30,000, two-and-one-half times our present load, before requiring additional major construction. The cost of the completed work to date totals $557,800. Because of our dynamic growth, we are reassessing priorities pertaining to supply, transmission, and replacement lines for the balance of the bond-issue money. The B-I-F control system including supervision and operator training cost $53,000 and the 2,000,000-gallon prestressed tank less connecting piping totalled $135,000. ◄◄

You Don't Need a Tall Stack

. . . or any other ugly land-blight in today's incinerator; Winchester, Ky., shows why

By M. G. TAYLOR, Jr.
Consulting Engineer



The short stack gives Winchester's new incinerator the appearance of an office building which will be enhanced by appropriate landscaping.

Tall stacks, a high structure and a multiplicity of equipment are *not* absolute essentials to a modern incinerator plant. One can design a good incinerator without them, assuming that he has reasonably good local conditions and uses the right operating procedures. We believe that the Winchester incinerator embodies the desirable features of efficiency and economy, without creating damaging land-use problems caused by these tall stacks.

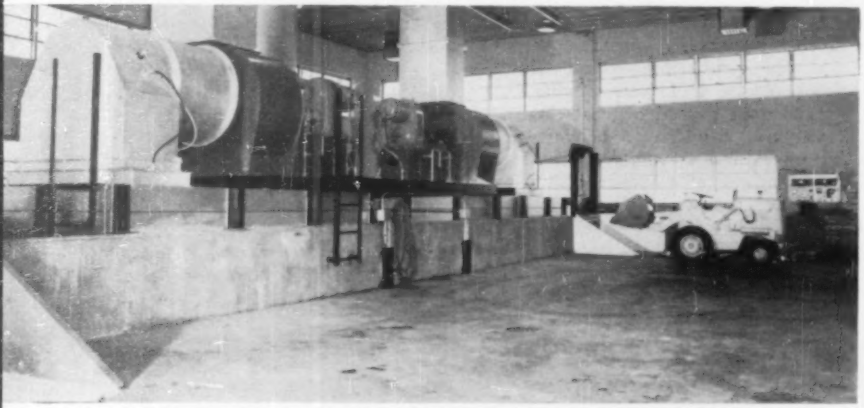
The facade resembles that of an office building. Only the ash-removal conveyors at each end identify the structure as an industrial facility.

Single Stack

The single stack protrudes above the roof only about 20 feet; the two induced-draft fan vent stacks on the roof are not visible from the ground. Fly-ash control complies with the most stringent air-pollution codes.

The plant's two furnaces provide a total rated capacity of 100 tons per 24 hours. Tests indicate that a somewhat greater capacity can be attained readily.

Each furnace has a grate area of 85.5 square feet and is designed to burn 50 pounds of refuse per square foot per hour. The volume of the primary or "combustion" chamber is 675 cubic feet; and that of the secondary, 243 cubic feet. The final settling chamber has a volume of 650 cubic feet. The furnaces are known as Amer-O-Matics and were built by the American Incinerator Corporation of Detroit to our specifications.



The charging floor houses the two charging hoppers, induced draft fans and the control panel (rear).

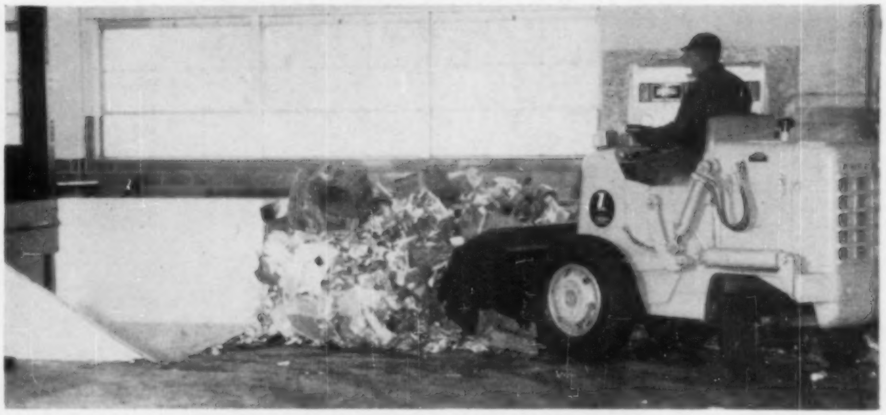
The Detroit Stoker reciprocating-grate stokers used in the furnaces operate on the continuous-flow principle, providing positive conveying action from the point of charging the refuse into the furnace to the discharge of the burned residue. The hydraulic, power-driven stokers with alternate lateral rows of reciprocating grates produce a tumbling and tearing pattern to expose the maximum refuse surface to the flame. This insures complete burning without manual stoking.

The grates, composed of alloys that resist high temperatures, introduce air to the fire through a large number of small openings. Thus, regardless of the condition of the refuse bed, the grates provide an even distribution of air for combustion and uniform grate cooling.

The length of reciprocating-grate travel and frequency of stroke are maintained automatically without attention, unless the character of the refuse changes, in which case conveniently accessible adjustments are provided for varying the cycle.

No Storage Pit

The charging equipment serving each furnace consists of a hydraulically operated guillotine charging door, a charging hopper able to receive four cubic yards, a hydraulically operated charging ram and the



The basic operation consists of pushing a load of refuse into the charging hopper with this front-end loader . . .

necessary operating and control equipment. The refractory-lined door is five feet wide and four feet high. Heavy cast-iron air-cooled tracks, bolted to a structural channel frame, guide the door to a fully open or fully closed position.

The charging ram, installed in a steel-covered trench, has a stroke sufficient to force the ram head one foot into the furnace.

Incoming refuse trucks back into any one of the three large entrance doors to discharge their loads onto the floor or directly into the hopper. A Hough Payloader with a 1½-yard bucket then pushes or lifts the refuse from the floor to the charging hoppers. A momentary touch of the loading button on the Payloader or control panel starts the loading cycle. The charging cycle consists of opening the guillotine-type door to fully open position, extending the charging ram into the furnace, retracting the ram and closing the door. A recycle circuitry causes the door to remain open and the ram to extend and retract continuously. This arrangement replaces the overhead crane found in many plants and permits us to make use of a lower structure.

. . . and then charging the furnace by means of the hydraulic ram.

Fly-Ash Control

The design temperature of the primary combustion chamber is 1,600°F, and 1,200°F at the incinerator exit. Gases exhausted from the incinerators pass through a breeching directly into scrubber equipment where they are subjected to cooling by temperature-controlled excess air and water spray banks. This insures complete saturation of the fly-ash particles.

The mixture of flue gases, air and water then passes through a series of turns, provided by three baffles, to remove the fly ash. Additional changes of direction separate the moisture from the gas stream prior to entrance to the induced draft fan. This process insures compliance with the most stringent air-pollution codes and reduces the temperatures to approximately 350°F. At this temperature a minimum concentration of moisture is present, preventing condensation in the induced-draft fan and stack.

The wet-tank bottom retains the excess water along with the collected fly ash. Its size provides sufficient retention for the settling of fly ash before the discharge of excess water to drain lines. The residue from the scrubber tank drains directly into the ash conveyor, making it unnecessary to clean the flue gas scrubber manually.

Ash Residue

Ash residue falls into an independent water-filled trough running under each furnace. Immersion-type, drag-link ash conveyors pull the quenched residue to an elevating conveyor which, in turn, discharges the material into trucks.

The induced draft fans, powered with variable-speed-drive equipment, are located above the furnaces, providing easy access from the charging floor. Operating controls are also located on this floor. These include a controlling system that locks the charging doors and rams in a closed position on excessive temperature rise.

Initially we recommended that two men operate the new 100-ton-per-day plant. However, subsequent studies have indicated that a one-man operation is practical.

This installation is the city's second incinerator. The first, erected in 1912, became obsolete and was finally abandoned in 1952. For the next eight years the city resorted to a landfill operation, but considered this as more of a nuisance than a solution to its refuse-disposal problem. ◄◄

CITY OF WORTHINGTON
SEWER DEPT.

Maynard Lueth, city engineer, inspects the operation of the SeweRodeR.

Mother Nature chose for us the proper time to create . . .

A Separate Sewer Department

By **MAYNARD R. LUETH**
City Engineer
Worthington, Minn.

When should a small city create a separate sewer department? Worthington, Minn. (population 9,015), found the answer to be when a lack of maintenance contributes to an overflow of sewage.

Oftentimes in small cities, the street department accumulates an insufficient amount of sewer equipment which they use strictly for emergencies. Preventive sewer maintenance is one of the many things which time does not permit. And these cities suffer, as we did, keeping their fingers crossed while hoping that something will happen to improve the situation.

Our situation became worse before it got better. For six years we received less than our annual average of 27 inches of rainfall. The intensity of the storms that occurred remained far below normal. During this period the city added 30 blocks of sanitary sewers to the original system.

In 1960, the rains came. Storm water entered the sanitary sewers from the old cross connections and through leaky joints where rainfall had infiltrated the ground. Debris in the lines prevented the free flow of the sewage. Although many new storm sewers were in place and doing a heroic job, they did not correct the cross connections, the hindrances to flow, or the leaks in older sewers. Many businesses and residences reported several feet of water in their basements. This situation occurred not just once but several times, as Mother Nature seemed determined to rectify the near-drought of the past years.

The small, part-time subsidiary of the street department was not able to correct the situation. Therefore, the council provided funds and created a sewer department composed of a foreman and two laborers who report to the city engineer. We purchased a Flexible SeweRodeR mounted on a Dodge chassis for $6,600 to replace the old machine.

Work started immediately. The new equipment easily reached old sewers which in some locations stretch 600 feet between manholes. The new crew found several places where debris blocked as much as one-half the cross-sectional area of the sewer. During the first two months the machine cleaned 20,000 feet of sewers.

We also concentrated on cross connections and leaks. The men found and repaired many leaking storm sewers which allowed storm water to enter sanitary sewers through faulty joints. They also uncovered and removed four of the old cross connections which bore the responsibility for wet basements. We use a fluorescent dye to detect these troublesome locations.

Records

A new system of records now tells a complete story of the sewer department's activities. The engineering department created a sewer map and log book for each day's operations. The foreman records in the log the location, depth, length and condition of each sewer he cleans. As a check, a meter on the SeweRodeR indicates the length of rods paid out as well as the accumulated length of sewers cleaned.

By feeling their way while rodding sewers, the crew discovered many manholes not indicated on the records. They raise these to street grade. In addition they build manholes over the right-angle bends in

Gene Roberts, sewer foreman, throws the engine in gear.

→

An adjustable stand steadies the rod guide.

in a Small City

the old sewers. They found 12 catch basins which had no connections to storm sewers. These collectors poured the accumulated water into the ground, creating deplorable conditions for the street surfacing. The crew joins these catch basins to storm sewers or, in the event none exists nearby, reports them to the engineering department for disposition.

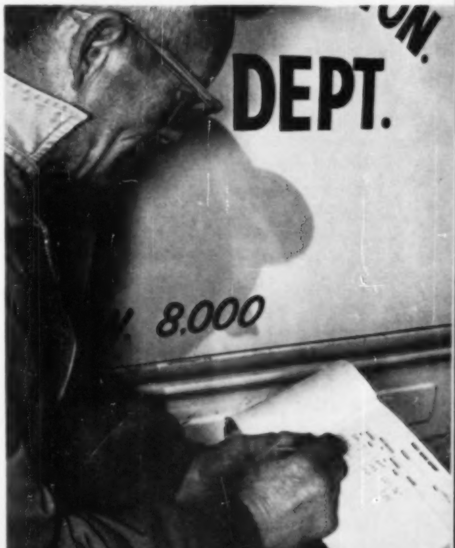
The three men in the sewer department clean, rebuild and check the sewers and lift stations. This occupies all their time except for short periods in the winter when they supplement the street crew to tackle particularly nasty blizzards. This minimizes the former practice of hiring extra help for snow removal. In return, the street department furnishes the use of the 1,000-gallon, South Bend flusher for sewer maintenance, when required.

Cost

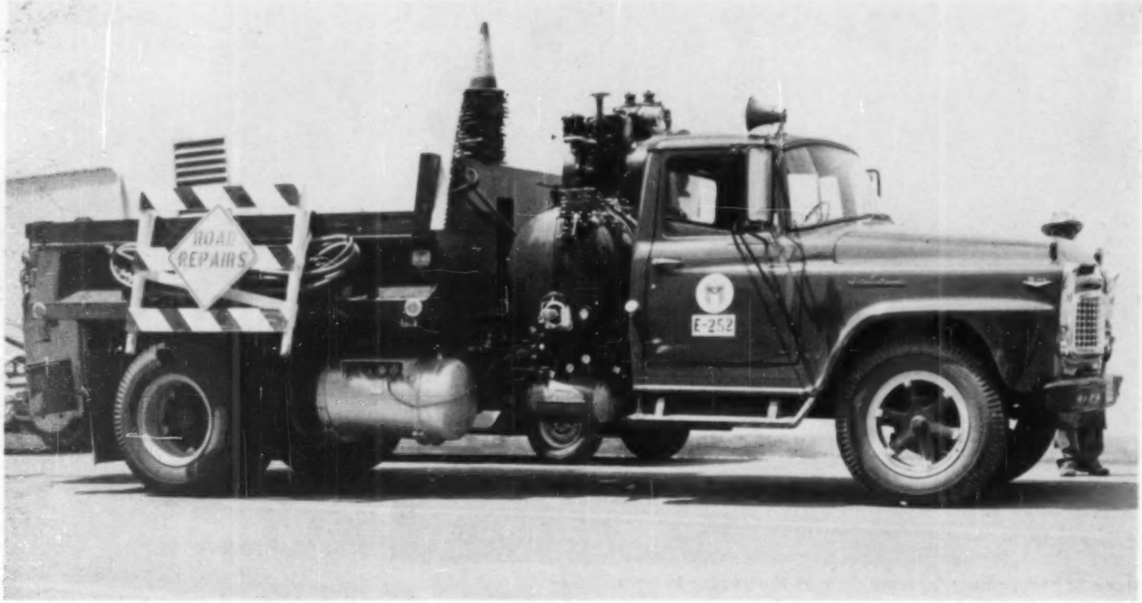
The major added cost of creating the new department was the price of the new sewer cleaning machine. We would, however, have needed this equipment even if the street department had continued to maintain all sewers. The new sewer foreman and one laborer transferred from the street department. The third man is the only addition to the payroll. We budgeted the sewer department for 1961 as follows:

Salaries	**$16,200**
Equipment, maintenance and operation	**2,200**
Miscellaneous supplies and material	**1,200**
Total	**$19,600**

This is not substantially higher than the amount spent prior to the creation of the new department. The results, however, prove conclusively that the strong preventive maintenance program, coupled with adequate planning and a record system, is improving the sewerage system. Recent storms have found the complaints considerably reduced. We expect that another year's operation will eliminate all but isolated cases of flooded basements due to preventable conditions. The absence of damage caused by even a few flooded residential basements or merely one flooded commercial basement more than pays for the small amount of extra funds now dedicated to the sewer department. ◄◄



A daily log indicates the progress of the preventive maintenance program.



Austin's self-contained patching unit arrives on the job, ready to do the work without the aid of additional equipment.

Austin's Compact Paving Repair Unit

By **S. ROUNTREE, Jr.**
Director of Public Works
Austin, Texas

Each of our new paving-repair units takes the place of two pieces of equipment plus three men. In addition, they almost double efficiency and reduce by one half the time required to perform patch jobs. As a result, Austin keeps up with preventive maintenance, so vital to the preservation of existing pavements, and keeps abreast of ever-increasing utility-paving cuts.

Street and Bridge Superintendent E. I. Purser and representatives of the Essick Manufacturing Co. pooled their ideas to develop the self-contained patching truck. It consists of a 1961 International B-172 truck with a Galion Model 12-R-3F bed with Uniscope hoist, purchased on a bid basis. Between the cab and body we mounted an Essick model TMU-200H asphalt sprayer with 18-hp air-cooled engine and 58-cfm compressor. The unit includes a butane heater and all necessary safety features.

The 58-cfm compressor supports one 58-pound paving breaker or other similar air tools needed to remove bad pavement, to tamp the base, or to square holes or cuts in pavement.

Thus the unit provides the work crew with air for power tools, RC-2 storage for heating and tacking, space to carry three to four cubic yards of asphaltic concrete, plus an Essick VR-28W vibrating roller for compacting the base and asphalt patch. Other equipment includes barricades and cones, hose racks, and a well supplied tool box.

The accompanying photographs illustrate how a repair crew utilizes the unit's various features on a repair job. For clean-up work we use a two-ton truck fitted with a LoDal hydraulic truck loader to pick up the material removed (another illustration of one piece of equipment doing two jobs).

The crew utilizing the patching truck comprises a labor sub-foreman and three laborers. The sub-foreman is in charge of the unit and work crew and does all asphalt raking and compressor work. The laborers shovel, tack-coat, roll, and clean up the patch.

We break down the cost of utility repairs on permanent-type asphalt as follows:

1. Cuts in streets with eight-inch flexible base and 1½-inch hot-mix asphaltic concrete. This we repair by pneumatic tamping of existing materials or select material to within 9½-inches of the existing surface, place eight inches of four-sack concrete (to within 1½-inches of the surface), and surface with 1½-inches of hot-mix asphaltic concrete. The charge for a three-foot-wide trench is $2 per lineal foot plus $15.

2. For concrete and asphalt on concrete we charge $2.50 per lineal foot plus $15. Again, this is for a three-foot-wide cut.

3. Patching where it is not necessary to remove the base or old pavement, and using 1½-inches of hot-mix asphalt, comes to approximately 7½ cents per square foot.

4. We can patch by removing existing asphalt and replace with 1½-inches of hot-mix asphaltic concrete for about 15 cents per square foot.

The charge for repairing utility cuts is obtained by use of a graph and point system, and reflects the

The 58-cfm compressor provides sufficient air to operate one tool for pavement removal . . .

. . . and then supports the asphalt sprayer to apply the tack coat.

actual cost including the following:

Laborer's wage—averaging $1.25 per hour.

Labor job foreman—about $1.50 per hour.

Equipment—from $1.50 to $2.00 per hour, varying according to actual monthly cost.

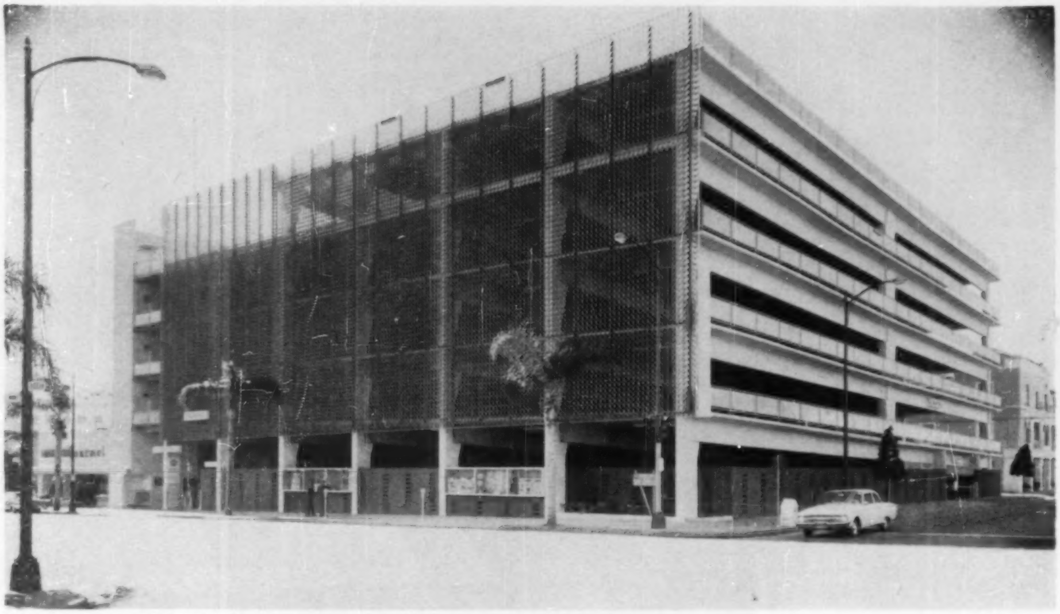
We purchase hot-mix for $4.25 per ton, f.o.b. plant site, concrete for $11 per cubic yard delivered, and base material, which is crushed limestone, for 90 cents per ton f.o.b. plant. There is no profit figured in the cost.

We own two paving-repair units and have one more included in the budget for the 1961-62 fiscal year. We plan to equip our four districts with one unit each, plus two units for construction.

When asked how he liked the self-contained unit, one labor-foreman in charge of such a unit replied: "The job can be done easier, quicker, cleaner, and cheaper." Coming from an employee charged with the everyday task of doing the work, this statement is a wholehearted endorsement of the patching truck. ◄◄

The 3-to-4-yard-capacity body holds sufficient asphaltic concrete for several patches . . .

. . . and carries the vibrating roller on its tailgate when moving from job to job. A second versatile piece of equipment performs clean-up work.



Skillful architectural design has given Beverly Hills an attractive parking structure in keeping with a quality-type business area.

A Fresh Idea In Parking-Structure Design

. . . that saved $250,000 in capital costs and allows more flexible operation

By **HARVEY L. HURLBURT**, Assistant Administrative Officer
Beverly Hills, Calif.

Beverly Hills has saved over a quarter of a million dollars by employing an unusual procedure to select both the design and the contractor for its new off-street parking structure. The city is also enjoying an extremely satisfactory operating experience under a management contract.

This is the first structure in Beverly Hills' municipal parking enterprise designed to eliminate a calculated current and predicted parking shortage. In 1955 the Beverly Hills City Council hired a municipal financing consultant, Stone and Youngberg, to analyze mounting parking problems and make recommendations for financing and developing off-street parking facilities.

This firm recommended that the city utilize the Revenue Bond Law of 1941 to finance the facilities which would be paid for from parking-meter and parking-lot revenue. The electorate subsequently approved a $5,000,000 revenue-bond issue and the council then engaged the traffic and parking engineering firm of Wilbur Smith and Associates to study the city's parking needs and recommend a concrete program. The consultants recommended four off-street sites which the city subsequently purchased and developed as surface parking lots.

Revised Specifications

The next step recommended by the parking consultant was development of a parking structure on one of the high-density sites. An architectural firm developed plans for a 400-car parking structure designed to cost approximately $781,000. However, the lowest bid was $161,000 over the architect's estimate. A second round of bids was called for on a revised set of specifications. At the suggestion of numerous contractors, the city also invited contractors to submit their own plans and specifications with accompanying bids. Under this alternate proposal, plans were to meet the following requirements:

1. Must provide parking for approximately 400 cars.

2. Must permit self parking.

3. Must allow for the possibility that stores might be built at ground level facing the main street; continuity of retail frontage had to be maintained.

Prestressed concrete girders and panels provide broad areaways with few conflicting columns.

4. Must not have cantilevered overhang over the adjacent alley or other property lines.

5. Must provide specified exit locations.

6. Must not involve underground parking.

7. Must conform with the standards of the 1955 edition of the Uniform Building Code.

Six proposals were submitted under this alternate bid provision. These designs offered such varying features as split level, sloping floor, and mechanical lift. A staff committee composed of representatives from the Administrative Office, Public Works Department, Building Department, Legal Department and a representative of the advisory Parking Commission then began an intensive three-week analysis of the proposals.

After a thorough study, the city selected a design submitted by T. Y. Lin and Associates from a concept developed by the Ellis White Company. Briefly, the building has 5½ levels, has a self-parking capacity of 365 cars, or an attendant parking capacity of 395 cars, and is served at all levels by a hydraulic elevator. It has no interior columns or obstructions except for a center longitudinal shear wall. Pre-cast and pre-stressed horizontal members 75 feet in length were used to accomplish this. They were fabricated off the site by C. D. Wailes and Co., a California concern. The floor, a warped, helical spiral, was cast in place and pre-tensioned. It has a grade of between 3 and 4% and extends one-half level below ground surface and five levels above ground surface. Advantages of the design are its economy, short construction period, flexibility of operation (no columns), moderate slope, full use of ramp space, and open airy atmosphere.

Two sets of large first-floor display windows front on the main thoroughfare. These windows are designed for use by public and welfare agencies or for lease to retail merchants who have stores in the general area.

Screened Frontage

A gray, anodized aluminum screen, gives a pleasing appearance to the front of the building. The screen, of short cylinders cut at an angle, was provided by the builder. He also provided blue metal panels on the sides of the building which front on the secondary street and the rear alley. Recession of the exposed corner of the building, at ground level, allows for a lighted, landscaped area.

Construction was completed in the relatively short time of 195 days. The building was opened for operation in September 1960.

To the basic bid price of $599,000 was added the cost of the decorative aluminum grill and other minor changes and the total construction cost was $646,449. Other costs, including nearly $250,000 for the acquisition of property, ran the total cost to $990,000.

Three months prior to opening the structure, the city called for and opened bids for its operation under a lease arrangement. The administrative staff considered various methods of operating the structure using the bid figures as one of the main bases for comparison. This study covered the following basic methods:

1. Operation under a lease arrangement.

2. Operation under a management arrangement.

3. Operation by a city staff consisting of a professional parking lot manager and attendants, all under civil service.

Beverly Hills had considerable experience with the lease arrangement, but none with the management ar-

EACH HALF HR.
MAXIMUM
CLOSE 7 P.M.
EXIT ONLY

A treadle-activated gate permits cars to leave after the building has been closed and locked.

rangement or operation by a city staff. Consequently, City Administrator John B. Wentz conducted a national survey to accumulate information on the experiences of other cities and parking authorities under these latter arrangements. After determining the advantages and disadvantages of all methods on the basis of financial return, city control, and administrative problems, the Council selected the management arrangement.

The management arrangement involves a private parking-lot operator who staffs and runs the activity under the general direction of the city. In return, he receives a flat fee plus a percentage of the net revenue as an incentive fee. Advantages of this type of operation are many. The city retains direct control over parking rates, operating standards, and hours of operation. It also controls all major expenditures and enjoys certain tax advantages peculiar to this area. The financial returns also appear to be higher.

City Control

Under the management arrangement, the city will, in effect, have the same control over the parking activity as it would if the project were operated by a city staff; but it will not be burdened with the headache of additional staffing problems and daily management. The city will also gain the advantage of an experienced parking-management group, as opposed to a single manager employed under the city staff arrangement.

Under the agreement, the managing firm receives a flat monthly fee of $349 and an additional 10% of the annual net revenue from the operation with the stipulation that when the flat fee plus percentage payment reaches $583 per month, the remaining percentage payment is reduced to 3% of the net revenue. The contract period was established as 34 months, over which period it was estimated that the city would receive approximately $170,000 net revenue. Under this contractual arrangement the manager pays all operating expenses including employee wages and receives monthly reimbursement for these expenses. The actual management and administrative costs, such as employing and directing the facility employees, setting up and carrying out work schedules, developing procedures and policies, handling customer complaints for damage claims, handling funds, preparing statements, are borne by the manager. The manager is responsible for all minor maintenance of the facility. Capital expenditures are the direct responsibility of the city. The manager is, on or before April 1st of each year, required to submit to the city a budget for all operating and maintenance expenses for the ensuing fiscal period.

Operation and Fees

The structure, which is staffed with two attendants, is open six days a week from 6:30 a.m. to 7:00 p.m., Monday through Friday, and 7:00 a.m. to 7:00 p.m. on Saturday. Parking rates have been set at 15 cents per half hour up to $1 maximum per day. Monthly rates have been established at $12.50 per month for roof parking, $15.00 per month for inside parking on the upper levels, and $20.00 per month for parking in the lower portion below ground level. This lower-level monthly parking area has been reserved for medical doctors who must have quick access to their vehicles in the case of emergency calls.

Upon entering the structure, transient parkers are issued a numbered ticket on which the time of entry has been recorded by time clock. Upon leaving, these tickets are again inserted in the time clock and a charge is made on the basis of the expired time. These same numbered tickets are retained by the management and used for a monthly tabulation of parking-structure utilization. They are also used for annual city audit spot checks. Monthly parkers are issued colored window decals keyed to the color code of their assigned parking area.

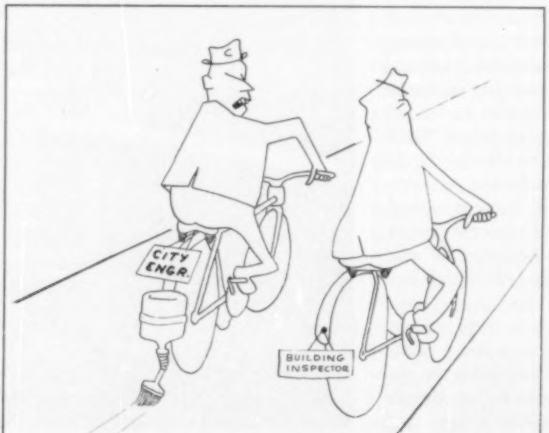
A city ordinance requires that all parking structures be closed with a locked chain, or gate, when not attended. In order to allow late parkers to exit from the building after closing hours, a Parcoa treadle-actuated electric parking gate was installed at the main exit which allows cars to leave but not enter after closing hours. The gate is up and inoperative during the regular open hours of the structure.

The structure's electrical system has been provided with a series of clock-actuated switches which permit close, automatic control of the entire lighting system. With these switches, all large outside parking signs, the planting area, and the display windows are kept lighted until 2:00 a.m., on the theory that this not only enhances the appearance of the structure but is an excellent advertising media. One third of the interior lights on each floor remain on until 2:15 a.m., as an aid to policing.

Public Acceptance

Public acceptance and use of this structure has far surpassed the city's original expectations. Within one month of its opening all stalls reserved for monthly parkers were taken and within three months the transient parking area was being used to full capacity. It would appear that the monthly net revenue to the city is leveling off between $5,500 and $6,000. Since its opening there have been no major maintenance problems nor have there been any major public-relations problems. The management arrangement appears to be completely satisfactory. The structure itself has drawn much professional acclaim, architecturally and structurally.

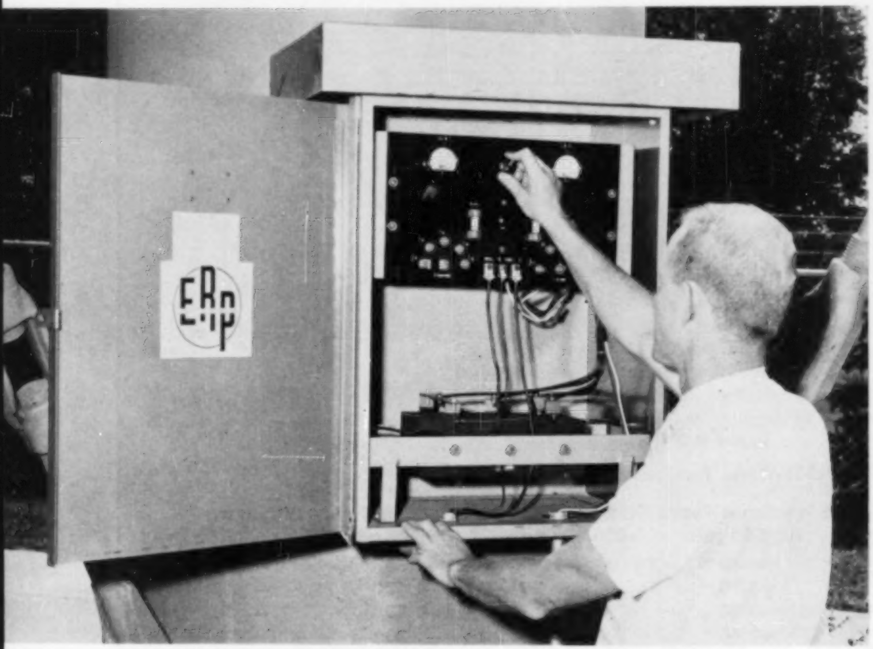
It is interesting to note that shortly after completion of the structure, the city was offered $1,000,000 for it. This offer by private enterprise would appear to validate the logical and financial soundness of the city's parking project. ◄◄



"If you ask me, Mayor Fleming has carried this economy thing too far."

Electronic corrosion protection for five municipal and most of the industrial water tanks justifies Decatur's claim to being . . .

A Cathodically Protected City



An engineer adjusts a rectifier power unit on a 1,000,000-gallon tank; weekly checks on all power units and a service contract with the manufacturer assure worry-free corrosion control.

By GEORGE H. GODWIN*

Eleven years of corrosion-control experience under local field conditions has pointed up the value of cathodic protection. By adopting this method at the beginning of our expanded elevated-tank-construction program, we in Decatur, Ala., have saved a considerable sum of money in tank maintenance. Numerous industries have followed our lead and now benefit from this modern method of corrosion control.

City growth made it necessary to virtually double the capacity of our water plant three times since 1935. Plant capacity has risen from 2.0 mgd to 12 mgd and the department's 20-square-mile service area now includes over 150 major industrial and commercial accounts and a service population of approximately 36,000.

With increased demand, the need for finished-water storage also grew. Until the industrial boom of the early post-war years, we relied on our 300,000-gallon elevated tank, erected in 1925, and our old 286,000-gallon standpipe erected in 1888. In 1946 we added a 1,000,000-gallon elevated tank in the southwest corner of the city. In 1949 the Chicago Bridge & Iron Company replaced the old standpipe with a 2,000,000-gallon elevated tank and built two more 1,000,000-gallon elevated tanks in 1959, bringing our total storage capacity to almost 5,500,000 gallons. Polglaze & Basenburg of Birmingham, Ala., served as our consultants for these projects. We now feel that our finished storage and system pressure are adequate for present and prospective future needs.

When our 2,000,000-gallon tank was built, we contracted with Electro Rust-Proofing Corporation to design

Cathodic Protection Defined

All corrosion is electro-chemical in nature. Metallic ions from a submerged or buried metallic surface flow from one point on that surface (anode), through a water or soil electrolyte, to another point on the surface (cathode). Metallic surfaces thus corrode at anodic points and conversely receive a protective effect at those points which are cathodic.

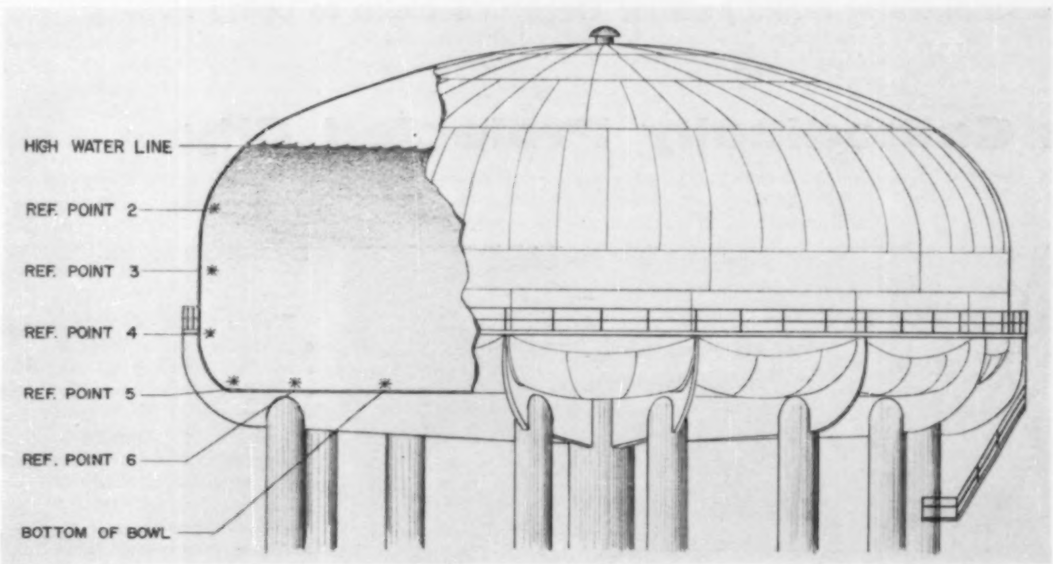
Cathodic protection renders the entire metal surface electro-negative, or cathodic, preventing any possibility of current discharge. This is done by impressing a direct current on to the surfaces to be protected by means of external anodes.

Anodes may be either galvanic or electrolytic. Galvanic anodes (of such materials as zinc and magnesium) are higher in the electro-motive series than is the metal to be protected, and are self-energized when electrically connected to the structure to be protected. Electrolytic anodes usually required for fresh-water tanks are energized by an external source of current. These anodes include aluminum, high-silicon cast iron, graphite, and platinum.

The principles of cathodic protection can be applied to any corroding metal that is submerged or buried. Thus, it is possible to prevent corrosion not only in water tanks and pipelines, but also on flocculators, clarifiers, pier pilings, steel building foundations, even on hulls and ballast tanks of ships at sea.

---

* Mr. Godwin has served as manager of the Decatur, Ala., Municipal Water Department since 1935. In 1949-1950 he was chairman, Alabama-Mississippi Section, AWWA, and president of the Alabama Water & Sewage Association. In 1950 he received the George Warren Fuller Award from AWWA for his outstanding contribution to the water industry.



Typical reference points in potential profile testing.

Table I

Steel-To-Water Potential in Volts (—)

Location of Reference-Electrode	Central NE Tank 2,000,000 gals.	Northwest Tank 300,000 gals.	Southeast Tank 1,000,000 gals.	Central NW Tank 1,000,000 gals.	Southwest Tank 1,000,000 gals.
Steel at Water Line	—1.72	—1.60	—1.40	—1.60	—1.62
Reference Point #2	—1.50	—1.70	—1.60	—1.40	—1.45
Reference Point #3	—1.52	—1.50	—1.80	—1.40	—1.36
Reference Point #4	—1.52	—1.40	—1.60	—1.20	—1.52
Reference Point #5	—1.44	—1.50	—1.70	—1.20	—1.44
Reference Point #6	—1.36	—1.40	—1.40	—0.90	—1.60
Steel at Bottom of Bowl	—1.12	—1.00	—0.89	—1.00	—0.97

NOTE: All potentials were measured with potentiometer voltmeter against a standard copper/copper sulphate reference electrode. A potential of —0.85 volts or more negative is adequate to achieve corrosion control.

and install cathodic protection systems for this and the older 300,000-gallon tank. These initial systems contained sacrificial aluminum electrodes which were replaced annually under a service agreement with the company.

Our experience with these systems was excellent, and, when the two new 1,000,000-gallon tanks were erected in 1959, we made the design and installation of similar systems a part of the tank fabricator's contract. By this time, Electro Rust-Proofing had perfected high-silicon cast-iron anodes. We elected to use these in the two new systems and converted the older systems. This eliminated the need for annual anode replacement and has brought considerable savings over the past two years.

Early in 1961, we replaced an existing cathodic protection system in the southwest tank with an E.R.P. system in order that all five of our systems would be of the same manufacture.

Test Conducted

We initiated a corrosion-control test when we installed the cathodic protection in our 2,000,000-gallon tank. Four test plates were suspended in the tank. Two were bonded to the tank and the protective system; two were suspended to corrode freely. Their weights before and after painting were recorded in our files and the engineers' files. In October 1960—11 years later—we removed and checked the plates. Table II lists the test results.

Visual inspection indicated aggravated corrosion activity on those plates not bonded into the protective system. Heavy rust scaling and tubercle formation were evident. Under this corrosion product there was considerable pitting. On the protected plates there was no corrosion or pitting, quite a contrast.

The uncorroded plates, bonded to the tank, were an excellent example of cathodically protected steel. A heavy calcareous precipitate was evident, with no pitting underneath. This calcareous precipitate does not form with all cathodic protection installations but only where calcium

Table II

Eleven-Year Corrosion Control Test Results

	1949 Weight Before Painting	Weight When Removed in 1960	Weight Loss
Plate #1 (Freely corroding)	779.0 grams	712.3 grams	66.7 grams
Plate #2 (Freely corroding)	782.5 grams	730.0 grams	52.5 grams
Plate #3 (Cathodically protected)	777.5 grams	776.5 grams	1.0 grams
Plate #4 (Cathodically protected)	783.4 grams	781.8 grams	1.6 grams

and magnesium salts are present in the water in proper amounts. While its presence shows that cathodic protection is functioning, its absence in a well designed system would only mean that these scale-forming salts were not present in the water. This precipitate, therefore, while a helpful by-product of cathodic protection, is not essential in achieving corrosion control.

Potential Profile Testing

The proper application of cathodic protection (see p. 83) depends on the understanding of the principles involved. The applied protective current depends upon the characteristics of the water being stored and treatment of the submerged surface. The operating voltage is determined by the water resistivity and the number and configuration of anodes. Good design balances the initial cost against power and maintenance costs to achieve the lowest total annual cost. The normal electrical potential of submerged steel varies between —0.40 volts and —0.65 volts when measured against the standard reference electrode of copper in copper sulphate. Steel will not corrode when its electrical potential can be changed in a negative direction to —0.85 volts or more. The protective current density, therefore, must be sufficient to polarize the steel to a minimum potential of —0.85 volts.

Testing to determine these potential values is known as potential profile testing. In December 1960, cathodic-protection engineers conducted such tests on four of our municipal tanks. In August 1961, a potential profile test was conducted on the new system in the 1,000,000-gallon southwest tank. Table I lists the results.

These tests and visual inspections show that all five tanks are adequately protected and free from corrosion. When we consider their replacement value — $1,170,000 above foundations — we are confident that our decision to use cathodic protection is a wise one. In addition to extending the life of the tanks indefinitely, cathodic protection has eliminated the cost of periodic downtime for internal cleaning and repainting.

Table III lists the power consumption and cost of the five cathodic protection systems. These costs plus that of annual inspection and adjustment indicate an amazingly low over-all maintenance cost.

The industrial tanks of the Autolite Corp. of Alabama, the Wolverine Tube Corp., the State Bonded Warehouse, two tanks at the Minnesota Mining and Manufacturing Co. plant and three at the Chemstrand Corp. plant are also protected by E.R.P. Decatur is, indeed, a cathodically protected city. We believe our experience and endorsement of our own cathodic protection was influential in at least one company's decision to use this method of corrosion control. In addition to these industrial users, our municipal natural-gas system uses an E.R.P. cathodic protection system to protect its steel pipelines. Adjustive survey tests indicate that this piping will remain free of corrosion.

Weekly Checks

We have an established policy in the Municipal Water Department of checking the power units on our systems each week. Coupling this with our service contract with the manufacturer, we confidently expect many years of worry-free corrosion control for our valuable water-storage structures. ◄◄

Table III

Maintenance Costs of Five Cathodic Protection Systems

Year E.R.P. System Installed	1949	1949	1959	1959	1961
Tank Capacity in Gallons	2,000,000	300,000	1,000,000	1,000,000	1,000,000
Square feet of wetted surface protected	21,827	7,246	15,483	14,980	15,016
Average maintenance cost per year, including replacement anodes and labor	$304*	$107*	$90	$90	$90
Maintenance Cost per square foot/year	$.0139	$.0148	$.0058	$.006	$.006
Average Power Consumption per year	1,450kw	900kw	376kw	405kw	1,970kw
Power Cost per square foot/year	$.0013	$.0025	$.00049	$.00054	$.0026
Total Protective Cost per square foot/year	$.015	$.017	$.006	$.0065	$.0085

*** NOTE: In 1959, sacrificial aluminum anodes on these two tanks were replaced with high-silicon cast-iron anodes. The new anodes will bring the average maintenance cost down to between $80 and $90 per year and lower total protective cost to well under 1 cent per square foot/year.**

On March 9th, a storm left 12 inches of snow.

The contractor plowed the snow to the curb and our rented loader pushed it into piles.

Contract Snow Plowing

. . . works satisfactorily but city forces would be better; the manager tells why

By **ROLAND J. DUBAY,** Town Manager
Winthrop, Maine

With its limited budget and personnel, Winthrop's Public Works Department can not now undertake all of the snow plowing, removal and ice control tasks with any assurance of success. For this reason, we have chosen to award a contract for the plowing and to handle the salting, sanding and removal of snow with city-owned equipment plus a few rented pieces.

Our current plowing contractor, a reliable and conscientious man, has received a renewal of last season's contract because of his exceptional performance. By ordering four plows to duty, as he proposed in his bid, he reduced to 12 the average number of miles for each to cover.

In the spring we advertise for plowing bids for a term of from one to five years. After opening them, we check the quality of the bidders' services with others for whom they have worked. The award of the contract takes place only after we are certain that the contractor has the ability and the desire to perform in an acceptable manner. Because we check past performance and ability thoroughly, the low bidder does not always obtain the contract. The premium of a few dollars for satisfactory service is a small price to pay for the assurance of success.

Plans for battling the wintry snows originate in late summer. From past experience, we decide how much salt and calcium chloride to order, how many feet of snow fence need replacing, and which pieces of town equipment require repairs.

City-Contractor Teamwork

In November, the public-works crew, consisting of a foreman, four employees and a few part-time helpers, undertakes the erection of 20,000 feet of snow fence to prevent or lessen drifting across the roads. Our agreement with the plowing contractor guarantees that town forces will erect not less than 10,000 feet of snow fence. A few weeks later when the carload of salt arrives on the siding, two of these men unload it. One season's requirements total about 100 tons. The salt shed houses half of this amount for use in pure form for ice control. The other half forms part of a sand-salt mixture which we spread on all hills, curves and intersections. Our four Century, Jr., spinner-type spreaders apply pure salt to those streets having high traffic counts. When temperatures plunge below 20°F, the crew adds small quantities of calcium chloride to trigger the salt action.

When the snow begins to fall, we counterattack by salting and sanding. The contractor rushes his vehicles into action when two inches accumulate. As quickly as he plows the snow to the curbs on the three-fifths of a mile of business streets, our rented loader pushes these windrows into large piles to create some curb parking slots so that drivers will not stop in the traveling lanes. We rent a Pettibone Speedall loader with a three-yard snow bucket each season for $10 an hour with a $200-a-month guaranteed minimum. We hope to buy our own loader soon.

When night arrives, we begin the

removal of these big piles. To minimize congestion, the Police Department coordinates its activities with the clean-up crew. They enforce the ordinance which bans parking in the winter months where it interferes with snow removal. Because we are rather a small town (population: 3,520), the officers usually attempt to locate the owners of any cars parked illegally before resorting to the tow truck.

Costs

To divide and control our costs for budget purposes, we list one section as winter-highway and another as summer. Past experience indicates that the proper division is 20 weeks of work for the winter section and 32 for the balance. Of the $62,000 budget for the street department, the winter portion consumes 44%.

The 1960-61 winter budget of $27,200 devoted $7,176 to contractual payments for the plowing of snow. The basic unit of the bid was $149.50 (up $5.50 for the current season) per mile plowed for the entire snow season without regard to storm frequency. Many cities let bids or rent equipment on an hourly basis. We have chosen the more inclusive mileage breakdown for plowing because we do not have adequate supervision to control this type of equipment working on an hourly basis. In addition, this lump sum bid tends to minimize the cost peaks and valleys resulting from exceptionally severe or mild winters. Beginning December 1st, the contractor receives five equal and consecutive monthly payments except in April when we defer payment one month to provide for late-season storms.

Equipment rental, maintenance and repair comprise the largest winter highway budget item at $9,125. We rent a loader and two trucks to supplement the town's 1961 Chevrolet and 1960 Ford trucks. This item also includes a revolving account to replace these vehicles.

The $6,900 labor charge, consisting of salaries for the regular crew and any part-time help required, falls third in line below contractual plowing. When severe storms strike, we obtain extra men to speed the salting and removal of snow so that the streets will be available for traffic the following morning.

Stockpiling sand and salt for ice control is also a rather sizeable item, totalling an estimated $2,625. Last year the cost per yard for stockpiling this mixture totalled $1.40. We have not isolated the cost of applying it to the streets.

The balance of this fund, $1,396, is for miscellaneous items which include small hand tools, utility bills, snow-fence replacement and similar winter charges.

Do It Ourselves

Even though our experience with contractual snow plowing has been satisfactory at times, we believe that municipally owned equipment would accomplish this task more efficiently because we could exert better control over the entire operation. The contractor's major concern is to make a profit by keeping his operational costs at a minimum. If he errs, he does so usually on the side of reduced rather than increased service. If we owned the plows and used city crews, our prime concern would be the service rendered.

After many years without any snow-clearing equipment, we have finally begun to obtain the multi-use type which can fight snow in the winter and accomplish various maintenance and construction tasks in the summer. A planned program toward this goal necessarily has to be on a long-term basis but we expect it to be fact rather than wishful thinking in a matter of a few years. The two trucks we now own are the start of a fleet which will enable us to accomplish many tasks without resorting to rented equipment.

The plowing done by some of the contractors has risen above the minimum standards set. However, if we can purchase the equipment to do this job ourselves, the standard of service will climb still higher. To justify the purchase of these all-purpose units, we must demonstrate a sufficient need for them during the summer season as well so that they will pay their own way on a year-round basis.

Within the next few years we trust that continuing analysis and the public's demand for increased services will demonstrate that the municipal-equipment solution is both economically sound and efficient. ◄◄

The town's employees hauled the snow to a disposal area.

Salt and traffic made the pavement practically bare.

For every 500 homes, located in gracious surroundings like this, Yorktown wants to provide 25 acres of selective industrial development, and 12 acres of commercial area.

Yorktown, N. Y., Sets "Tax-Balanced" Land-Use Plan

A "tax-balanced" plan promises fiscal soundness to Yorktown, N. Y., a community of 16,500.

The town has designated 4,100 acres to be "tax-balanced" when fully developed. This will require enough non-residential development in the area to offset the tax deficits produced by homes and tax-exempt properties.

The program, conceived by Yorktown developer David Bogdanoff, went into effect earlier this year after three years of study. It has two purposes:

- **to balance residential and non-residential development in a community in order to produce a stable tax rate.**
- **to prepare a comprehensive plan in close cooperation with a responsible developer who is prepared to build in accordance with the plan.**

In effect, the developer, principally Mr. Bogdanoff, who has been building in Yorktown since the early 1950's, turned over to the community the planning of his land—and gave the town $18,000 for an overall study. His only stipulation was that the study be made in the area where his firm, the Jefferson Valley Corp., was operating. The corporation had 690 acres in the northeast section of Yorktown, 150 of which had been developed so far.

Yorktown's former planning consultants, Frederick P. Clark and Associates, of Rye, N. Y., started the study, which became known as the "Northeast Planning Program." In the middle of the study, the Clark firm's representative in Yorktown, Robert Mickle, started his own firm with the town's engineer, William Marcon, and the two completed the plan under the auspices of the Clark firm.

Yorktown, located 35 miles north of New York City in Westchester County, is one of the communities which underwent a tremendous residential boom in the 1950's. The tax rate skyrocketed because the town did not experience proportionate non-residential development.

Town officials in Yorktown believe that they can stem the tax tide with the Northeast Plan and others like it. Officials now plan a study that would put the rest of the town's 21,000 acres on a "tax-balanced" basis.

One of the first steps taken in the northeast study was to determine the land-use ratio that would produce a stable tax rate. In determining this, planners had to find what each existing property use in the northeast section would produce in taxes and what it would cost the town to service.

The planners confirmed that the kind of single-family development currently found here did not pay its own way. In the case of Yorktown the study showed that these homes produced a tax deficit of $100 annually.

When planners determined the land-use ratio they say will make the northeast section "tax-balanced," they found that 8% of the property would have to be developed in laboratory, office or industrial uses and public utilities, while 4% would have to be developed in business.

To produce a "tax-balanced" land use, the planners recommend 25 acres of laboratory office, industrial development and utilities and 12 acres of business for each 500 homes (located on 312 acres).

The planners believe that the northeast area will not have to be fully developed before signs of a stable tax picture appear. As long as the area develops along the lines called for in the study, planners feel that the chances are good for the section to achieve a substantial "economic balance" of land in five to ten years. They estimate it will take 15 years for it to be fully developed.

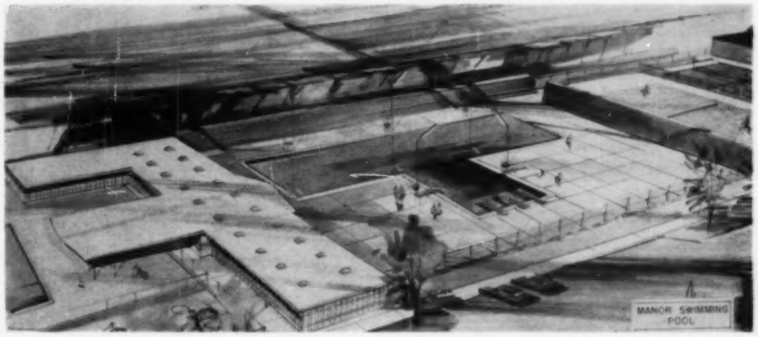
Most of the undeveloped land in the northeast section is already zoned for one-half-acre residential use. The land zoned for half-acre lots, but designated in the northeast program for other uses, will be rezoned for those uses as it is needed. It would then be protected by Yorktown's unusual zoning ordinance, which does not allow land to be developed except for the specific use for which it is zoned. ◄◄

An extremely wide paved deck surrounds the pool.

Cicero's Aluminum Swimming Pool

. . . requires evening hours to accommodate the increased number of bathers

By **A. J. ZELENKA***
Cicero, Ill.



The architect's rendering indicates the separation of the tot's pool (extreme left) from the main pool.

An aluminum swimming pool, shaped like a gigantic T, has proved so popular in Cicero, Ill., that Clyde Park District President Edward Stejskal is keeping it open two evenings per week in addition to the regular daytime schedule.

The bar of the T measures 42 feet wide and 150 feet long. These dimensions conform to Olympic and AAU standards. The depth of this portion varies from 5 feet 3 inches at the center to 3 feet 6 inches at the ends. The rectangular shape provides swimmers with a large area which is relatively shallow and has positive protection from neophyte divers.

Divers use only the 42x40-foot area which forms the leg of the T; a depth of 10 feet 6 inches beneath the two boards gives them adequate maneuvering space. Swimmers, in turn, do not interfere with the divers in their sheltered cove.

Prefabricated aluminum alloy #5050-H34 sections form the backbone of the new pool which is now in its second year of operation. The floor panels measure 8 feet by 4 feet by ¼-inch thick; wall pieces are 6 by 4 feet by ¼-inch thick.

In each case the construction consisted of simply welding the sections together in place on the prepared backing of poured concrete pads.

Rust Prevention

No rust or corrosion will ever mar the smooth surface. Two coats of epoxy enamel reduce reflection and please the eye. No cracks will appear to cause problems of leakage and repair because the aluminum plates expand and contract as necessary to absorb and transmit the weight of the water and the temperature changes without difficulty.

Howard L. White, the pool contractor, explains that most pool maintenance costs rise sharply beginning with the eighth year. He expects that the relatively maintenance-free aluminum pool will not require a comparable amount of work to keep it trim. The aluminum pool carries a five-year warranty.

Only one other public aluminum pool is now in use in the adjacent Chicago area. It is substantially smaller than the Cicero facility but we expect experience to prove the economy and adaptability of other aluminum pools for many design situations.

The upper aluminum sections include a roll-out ledge. This helps swimmers to leave the pool without using the ladders. The ledge projects

---

* Mr. Zelenka has served the Clyde Park District in the capacity of consulting architect since 1925.

A marquee provides shade for the children's supervisors.

slightly above the surrounding concrete deck area to provide a method of skimming floating, foreign material from the pool merely by raising the water level above the ledge. It also contains a built-in recirculating duct which eliminates piping troubles and the necessity of a service tunnel. Non-clogging drain slots, located continuously around the entire perimeter, insure controlled overflow. The ledge unit also contains an integral overflow drainage system. An Aurora 900-gpm recirculating pump returns the water to filter or waste as desired. Access ports on the system allow examination space.

One Fischer Porter 200-pound-per-day chlorinator assures complete disinfection of the 380,000-gallon pool. A 50-pound-per-day unit serves the separate 5,000-gallon tots' pool. Safety shut-off valves automatically cut off the flow of water if the chlorine dosage should become stronger than required. One Infilco diatomite-filter installation services both pools at the rate of 1.5 gpm per square foot.

Six General Electric mercury-vapor luminaires of the power-groove-lamp type on 24-foot aluminum standards provide adequate illumination. In contrast to many pools, the lights project over the water, eliminating shadows along the sides and at the corners of the pool. The park district originally specified the lighting for use at dusk and on cloudy days. Public requests, however, have resulted in the opening of the pool two evenings per week.

The entire facility cost $350,000 and includes the two Chester Products pools, a bath house, three playgrounds and an 80-car parking lot on the 150-by-270-foot site. Additional parking is available nearby. Local taxpayers gain free admittance with identification cards.

The bathhouse features a traffic pattern which requires bathers to step into a built-in foot bath containing disinfectants on their route to the pool and back to the bathhouse. Each side of the bathhouse contains 23 showers and 365 lockers. Terra cotta glazed tile provides beautiful and easily cleaned walls. A centrally located office insures convenient supervision of the entire pool area and complete control of all equipment.

Seven life guards with Red Cross training adequately protect the swimmers who, under state regulations, are limited to 450 persons. No serious accidents marred the first season of operation. ◄◄

Accident-prevention board provides three benefits

A new program which includes a four-man accident prevention board provides three benefits to the citizens of Sacramento, Calif., and its municipal employees. They are the reduction of on-the-job injuries, decreased insurance charges for city vehicles, and fewer repairs to the city's 650 vehicles, valued at $2,000,000.

After an accident, the municipal driver must appear before the board —whether he was at fault or not. The employee receives a letter of reprimand from City Manager Bartley W. Cavanaugh if he is the negligent party. In extreme cases the penalty consists of removal from driving status or suspension for a maximum period of ten days with loss of pay.

The board consists of Traffic Engineer Dudley Stevens, a member of his staff, Safety and Training Officer Earl Simons and Captain Pat Bennett of the police traffic division. Monthly board meetings provide an opportunity to study cases, hold hearings and disseminate information. Since the creation of the board in 1957, the vehicle accident rate has shown marked improvement. The 1958 frequency of 4.59 accidents per 100,000 miles fell to 3.60 in 1960. ◄◄

A city employee demonstrates his side of the story.

Beeville transformed this jumble of disorganized files crowded into an inadequate floorspace . . .

Automation Plus Indoctrination

. . . of both the public and city employees results in a city accounting program that is pleasing to taxpayers and the administration

By **L. E. WEBER**
City Manager
Beeville, Texas

. . . to an orderly, simplified and mechanized accounting system with an accounting "control center" convenient for the public.

Citizens *can* complain, and probably will, if they have been receiving hand-written receipts for tax payment for 20 years or more, prepared by a cashier they know in a handwriting they recognize, and then start getting cold, impersonal key-punch tax receipts. The chances of complaints are particularly strong when the city is the size of ours (population 15,000). They will complain even though they realize that the method is laborious, time-consuming, and subject to human error.

At the same time, when employees of the city, no matter how competent, have been doing this work by hand for years in the past, you have to give them a little period of indoctrination when you tell them to put the fountain pen away and start pushing the keys of a shiny new accounting machine. This little period, fortunately, gave both the employees and the public an opportunity to get acquainted with the machine, and to welcome it into the "family" of Beeville as a symbol of progress and efficiency.

The accounting machine is only part of the story of improved administrative efficiency here. Our City Hall was badly overcrowded, had inadequate space for storage of records, and was a source of annoyance to everyone. With a mandate from the businessmen, through their Chamber of Commerce, the City Council issued $50,000 in warrants to purchase a building adjacent to the existing City Hall and downtown fire station. They then issued warrants for $28,000 more to remodel the building into office space to house the operations.

We remodeled the City Hall into the Corporation (traffic) Court, police station, and firemen's dormitory, and transformed the building adjacent to serve as the water and sewer utility and tax office. We also provided space to issue the various licenses and permits needed in every city.

We designed the floor layout to permit payment of water and tax bills just inside the main entrance at the "cashier control center." Those wishing building, electrical and plumbing permits can obtain them just a few steps down the lobby. The Purchasing Department is located near the front entrance of the building. Thus with our new floor plan, we are able to arrange payments of cash at one location, permitting convenient use of a machine-validation system.

Therefore the next step was to select a validating machine that would do all the tasks needed to keep the financial records for a city of our size. Such a machine would have to:

- **perform the receipting operation with a minimum of writing and time.**
- **record pertinent information on the customer's receipt and the city's record.**
- **provide a complete breakdown between the several funds of the city and a sub-breakdown of the revenue classifications within each fund.**
- **provide an audit tape of all the foregoing information.**

For these specifications we selected a National Cash Register, class 41, validating machine. However, we had further work to do with our own records to make the machine perform smoothly.

The principal task was to simplify the receipt forms so that they virtually eliminate any handwriting. We gave receipts for each separate fund a different color to make them easier to separate and check at the end of the day. The machine we selected can provide instant totals and subtotals for six different funds, and, we understand, can be built to receive and total 19 separate funds. However, we currently have only the five funds listed below:

- **General**
- **Utility**
- **Housing**
- **Paving and Escrow**
- **Unapportioned Tax**

We can code as many as 99 types of revenue within each of the major fund categories listed above. The accounting office separates and posts each type of revenue; the cashier needs only be concerned that the totals shown on the audit tape and the total receipts of each fund match with the cash for the day. The machine prints the summary totals for each fund on our "Daily Cash Report," which goes directly to the city manager for general information purposes. At the same time it prints this information on the audit tape, a continuous adding machine type of tape, which thus reflects every transaction the machine recorded during the day, serving as a double check to insure against the loss or misplacement of receipts.

For the customer, the cashier merely notes the type of revenue on his portion of the receipt. The cashier also notes the customer's name on the city's portion, in case questions should arise later. Even this small amount of writing is optional and need not be done unless desired for a more complete record.

The cashier accounts for every receipt through the validation machine. Even though some operations, such as the Corporation Court and the dog pound, must collect money at separate locations, the person responsible must turn in a balanced cash report daily to the cashier who in turn checks it and records it as a single transaction. The person turning in the money receives a receipt, as the customers do, thus making the cashier responsible for that money as part of the daily receipts.

Everyone had to become adjusted to the new system. But soon both the public and our financial employees gained confidence in it, realizing that when the machine validated a receipt, the money virtually had to be recorded correctly. The public likes it, as do our employees. It catches the spirit of our new City Hall arrangement with its order and lack of confusion. ◄◄

A fire station needs color

Coral Gables, Fla., believes in building crisp freshness into its new fire stations, combining it with functional efficiency. Its most recent station stretches 218 feet along the highway, accommodating a ladder company, an engine company, living and training facilities. The generous use of color leaves a warm and lively impression not always associated with public buildings. A two-story wall of glass next to the highway gives passing motorists a glimpse of glistening red motorized equipment silhouetted against a mosaic tile wall of white, blue and orange. From a striking yellow balcony project the only visual reminders of the fire house of an earlier day—two metal poles down which the firemen slide to reach the equipment.

On the first floor, a comfortably furnished living room adjoins a kitchen-dining area. Upstairs are dormitories, locker rooms and shower rooms. A quiet study room permits firemen to read or study without interruption.

Adjoining the main structure, a hose-drying yard is screened from public view by brightly colored double-faced asbestos paneling. A three-story drying tower completes facilities.

The new station is not only a fire-fighting center but also a training headquarters for the whole department. A five-story tower has been constructed which incorporates the structural features of many types of modern buildings. It will be used for teaching fire-fighting skills to recruits and in practicing jumps, ladder drills and other techniques.

An unusual training aid is an underground pit which provides a source of water for testing the pumpers and for instruction in problems of hydraulics.

Paul Matheson
Fire Chief

The new Coral Gables fire station embodies a crisp modern line and a functionally efficient design and arrangement.

Municipal Group Insurance

. . . features major medical riders in its low-cost program in Florence, S. C.

By **WILLIAM C. SNOW***
Administrative Assistant

City Manager Black, author Snow and an insurance representative review the comprehensive analysis of insurance bids from the 17 companies.

When our new city manager, R. Powell Black, arrived here in November 1960, one of the first administrative shortcomings that he noted was that of hospitalization insurance. In fact, employees in virtually every department complained of this. After consultation with the city's insurance advisor and discussion with department heads, he recommended to the city council that it adopt a new insurance program partially financed by city funds. With council agreement, Mr. Black then met with department heads to prepare specifications for insurance that would include major medical aid. We then assembled an invitation to bid which included:

- **general information about the proposal.**
- **22 specifications covering items such as benefits, experience rating, financial status and premiums.**
- **"Schedule A," 42 questions about hospital insurance.**
- **"Schedule B," describing a major medical plan up to $10,000 for each employee and each of his dependents.**

We invited bids only from insurance companies licensed by the city, with local representatives, feeling that this would insure proper handling of claims. On February 15 of this year, we advertised for sealed bids, and three days later distributed 40 sets of specifications. One month later, we opened sealed proposals from 17 companies.

Evaluation of Bids

The next task was to evaluate the bids to see which were in the best interest of the city's employees. To do this, we prepared an analysis sheet, spreading six feet long, and by two and one half feet wide, listing each of the 42 questions included in the invitation to bid, plus the cost of the life insurance, hospital insurance, and the major medical program. We listed the companies by numbers rather than by names, to insure impartiality.

Following careful and deliberate evaluation and analysis of the information on the spread, we selected the five best proposals to the advantage of our employees, irrespective of cost. Also, the few benefits offered by a bidder, other than those specified by us, were carefully considered in relation to our overall desired program and eventual cost.

After narrowing our bidders to five, we made another analysis sheet, listing proposals from the lowest in cost to the highest. At this time City Manager Black called a second meeting of department heads and presented the two analyses. He then carefully explained both and asked the men to vote on the proposal that they thought best. As a result, we were able to make a unanimous selection of one company.

Then Mr. Black sent a letter to each of the companies, explaining which proposal had been accepted. He also invited them to come to his office and review the findings. Several telephoned, and the second lowest bidder did come, but after reviewing the analysis carefully, admitted that the selection was in the city's best interest.

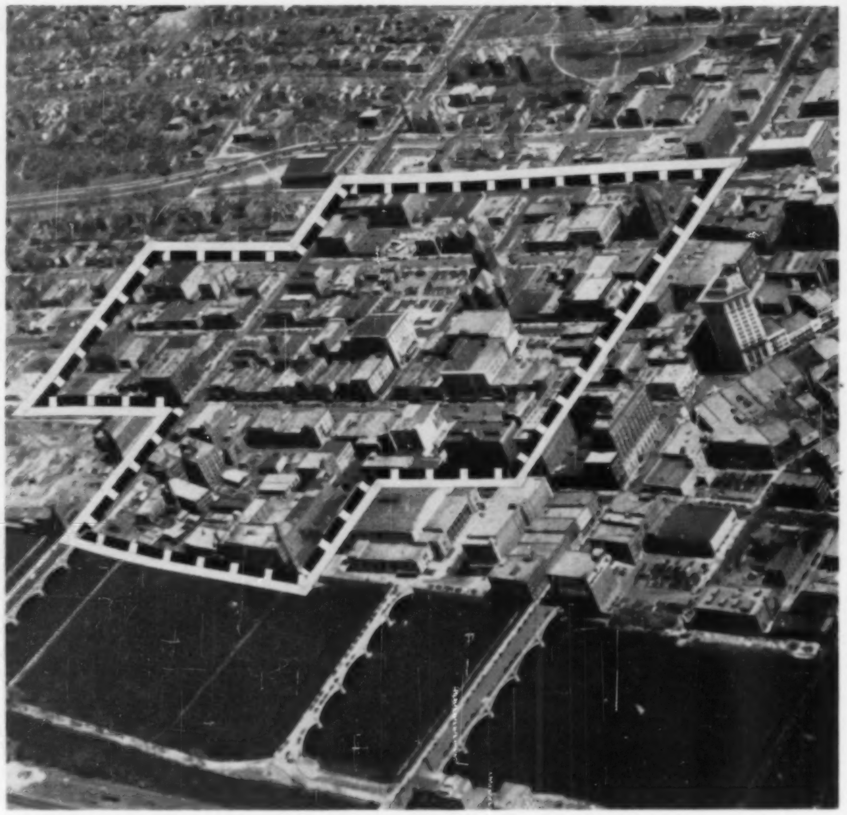
The new program provides:

- **a policy with much broader coverage than we have ever had in the past, including major medical.**
- **a savings in premium cost. Previously an employee with two or more dependents had to pay $16.20 per month. The new group cost for the same employee, will be $13.85 per month. With city participation, paying for 20% of the total monthly premium, the cost drops to $11.08 per month, for an over-all saving of 31%.**

Of course participation in the program was not initially mandatory. However, 223 out of 229 employees voluntarily enrolled. ◄◄

---

* Mr. Snow came to work for the City of Florence in 1952, after attending the University of South Carolina. He spent 7½ years in the City Clerk-Treasurer's office as accounts clerk and in February 1960 he was promoted by the city manager to personnel and accounts officer in the manager's office. Since that time, he has advanced to the position of administrative assistant.



Downtown Grand Rapids

By **J. PAUL JONES**
and **PHILLIP R. YOUNG***

After several generations of serving the financial, governmental and retail needs of the Grand Rapids area, the owners of the downtown community stood back and took a long look at its physical plant. This downtown shopping center, which had enjoyed the luxury of a virtual retail monopoly, suddenly was faced with strong competition from new outlying commercial developments. The competition looked tough; here is what the merchants saw:

- **Unattractive buildings.**
- **Streets throttled with congestion.**
- **No parking space for cars which brought shoppers downtown.**
- **Pedestrians no longer able to stroll casually across the streets.**

Downtown had become a tired replica of its former Gibraltar-like image. Grand Rapids began worrying about this first in 1956, when the mayor appointed a group of interested citizens to a Metropolitan Study Committee. This group developed an ambitious program calling for capital expenditures of about $30,000,000, which subsequently economy-minded voters rejected. This setback emphasized the need for a dynamic program sponsored by a strong, private group.

To fill this need, the Downtown Council of Grand Rapids was organized in 1958, with a pledge that it would be an *action* group rather than a promotional one, to help cure the basic ills of the city, since these ills had an adverse effect on the central business district.

The Council recommended that a consultant be hired with the cost of these services to be paid by private business. The City Commission quickly accepted this proposal, and Mayor Stanley J. Davis appointed a Downtown Redevelopment Committee, with Commissioner Arlon G. Ley as chairman, to work with the

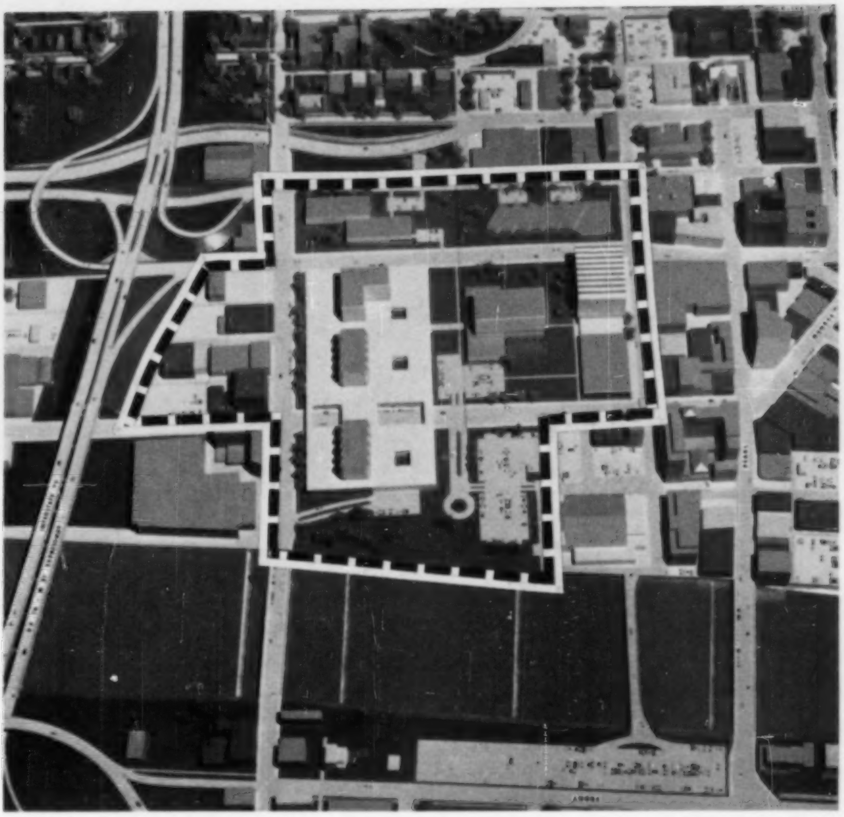
---

* Mr. Jones is planning director for the Grand Rapids City Planning Commission. He is a graduate of the University of Virginia in economics and architecture. He has been regional planning officer for the San Francisco Urban Renewal Administration, and director of community planning, Ebasco Services, Inc., New York, N. Y. He has participated in downtown plans for Spokane, Wash., Canton, Ohio, Bluefield, W. Va., and Wilmington, N. C., and redevelopment plans in a number of cities.

Col. Young (USA, Ret.) is Executive Secretary of the Grand Rapids Downtown Council. He joined the council in November 1958, organizing its activities in the fields of downtown renewal, expansion parking program, and other programs. He is a member of the International Downtown Executives Association and has been active in civic affairs.

←

This jumbled center of downtown Grand Rapids is currently in the process of a renaissance that will turn it into . . .



→

. . . an attractive, convenient area, easily accessible by expressway and comfortable for shopping and business.

Decides to Compete

consultant, the City Planning Commission and City Manager Alfred H. Rypstra's staff.

Once the need for action had been made evident, the citizens moved quickly. The consultants and planning staff first prepared a short-range development program. This included:

40 acres of clearance for new public and private development in the area between Michigan, Ionia, Lyon and Grand River.

A $2,300,000 off-street parking program surrounding the retail core to provide parking within 625 feet of every building.

A new and dramatic civic center to replace the antebellum governmental structures.

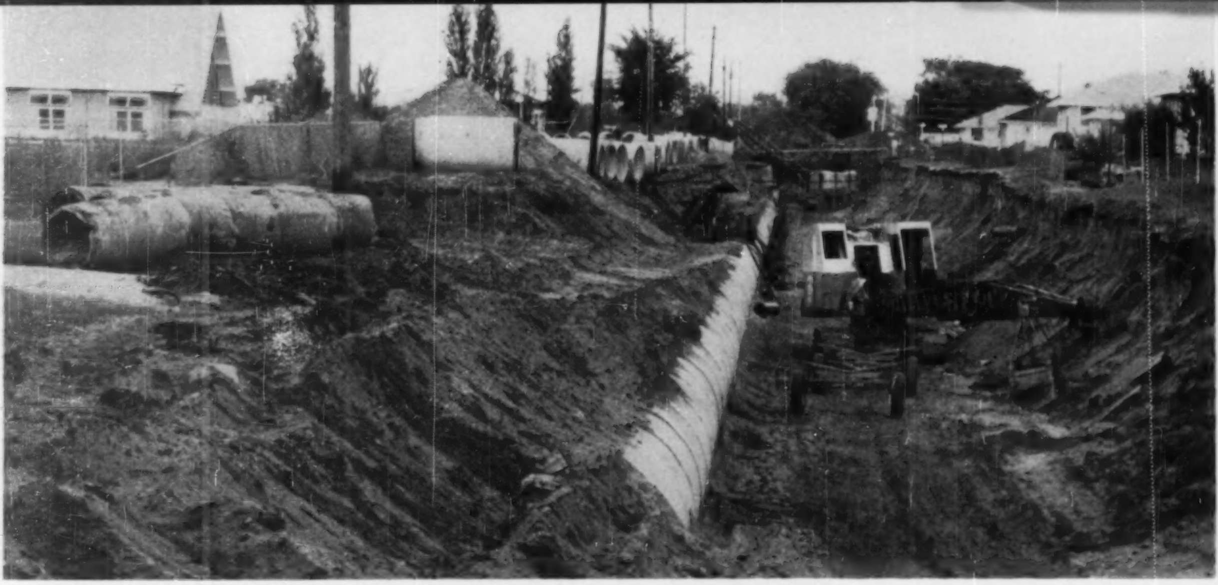
Acreage for new private development adjacent to the civic center in which new construction of between $10,000,000 and $25,000,000 will be probable.

New street improvements to assure the easy movement of cars within the central business district including the southerly extension of Monroe Avenue to Market and the extension of Jefferson Street north to a major expressway interchange. The result—an "inner loop" and an "outer loop."

Approval of a millage increase of 1.75 mills for three years by the citizens to pay the local share of the costs and permit the program to move forward. The total amount to be provided will approximate $3,000,000.

In order to obtain the broadest design advice available, the sponsors of the program worked closely with the Grand Rapids Metropolitan Architectural League. This group played an important role in the image-creation phase through their Work Committee. They undertook to furnish, as a civic project, idea renderings for portions of the central business district. These idea renderings were included in a demonstration brochure that was prepared for select distribution to some 5,000 business and influential leaders in the community. This brochure was also reproduced as a tabloid and included as an insert in the Grand Rapids newspaper. This demonstration brochure and the tabloid were the most effective.

The city then applied for an urban-renewal grant for the renewal and redevelopment of a nonresidential area. Upon the approval of the survey and planning application, the Downtown Development Committee placed a charter amendment on the ballot requesting the increase in the millage limitation with the stipulation that the funds be used only for urban renewal and rehabilitation with the City of Grand Rapids. The citizens' action in passing this issue three to one was considered remarkable in that the voters actually were approving an intangible program. ◄



Construction of both a water and a sewer system to replace the detergent-contaminated wells required excavation of the entire street right-of-way.

Frothing Faucets

. . . sparked a completely new water and sewerage system for an All-America city

By **SAM H. HOBBS***
Director of Public Works
Bloomington, Minn.

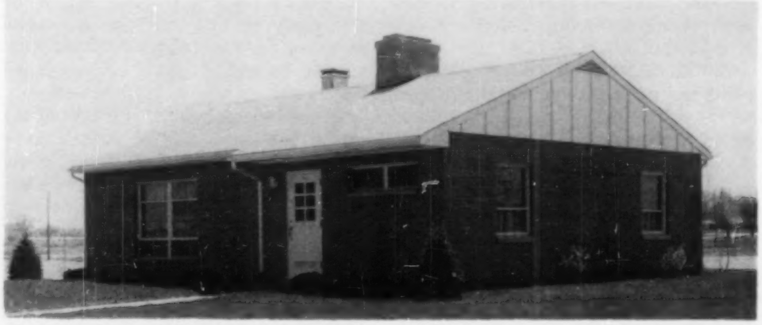
Even in sandy soil, individual wells and septic tanks fail to provide adequate sanitation safety for city dwellers. Tests by our own health lab a few years ago indicated sewage contamination of 74% of the more than 9,000 individual wells tested.

As a result of these tests we are now nearing completion of a $20,000,000 municipal water and sewer program to protect the health of Bloomington's 52,000 residents. The facilities include 180 miles of water mains and a proportionate length of sanitary sewers. They serve nearly all of the 13,000 homes in the city. Future construction, provided for in the original design of these facilities, will satisfy the balance of the residents as they petition for the improvements in individual areas.

When incorporated as a village in 1953, Bloomington's population was one-fourth of the present total. Its proximity to both Minneapolis and St. Paul is responsible for the attraction of new residents at a startling rate. Its classification recently changed from village to city. Each family formerly depended on its own well, many of which were only 15 to 20 feet deep, and a back-yard septic tank. The sandy soil which underlies most of the quarter-acre plots soon became saturated with sewage, traces of which gradually appeared in the drinking water. Faucets frothed from detergents. Proof of this pollution silenced those who anticipated no need for a municipal sewer and water supply no matter how densely populated the area became.

Municipal Water

Bloomington officials wisely recognized that such problems would develop, particularly in the light of estimates which indicated a population to exceed 100,000 by the year 2000. In 1959, after two years' study and analysis, Orr-Schelen, consulting engineers, submitted a comprehensive sanitary-facilities report



Sewer pumping stations in residential areas resemble surrounding structures.

---

* Mr. Hobbs has served as Director of Public Works since 1959. Prior to this he was the city engineer of Yakima, Wash.

Dewatering the sandy soil made the residents' wells useless.

which included two alternatives regarding the water supply.

The first provided for a system of about 40 wells, each of which would produce approximately 750 gpm. These wells would lie in one area to facilitate treatment at a common site. The second provision suggested that Bloomington obtain treated water from Minneapolis. The distribution system in each case supplied the same areas but the location of the feeder mains differed. The engineers discarded the possibility of obtaining water from the Minnesota River because of its unreliable flows and the poor quality of the water.

Based on the anticipated future population and fire requirements, Bloomington needs totaled 36 mgd. This amount would provide a peak per-capita supply of 300 gpd, almost three times the expected normal use. To design the distribution system, the consultants relied on the newly completed future land use, population density and zoning surveys and analyses. Although these are subject to change, the system we are now constructing provides economically for the future as well as present knowledge can foresee.

Sewerage Plans

Recognizing that the concentration of so many septic tanks could produce far-reaching pollution, the council made concurrent plans for a sewerage system. The consultants analyzed the alternatives of pumping this waste to the Minneapolis-St. Paul system for treatment and disposal into the Mississippi River against a plan to construct a sewage treatment plant for the village on the bank of the abutting Minnesota River. Based upon the poor characteristics of the local stream as well as the possibility of the formation of a Metropolitan Sewer District, the council went ahead with arrangements to pump into the Twin Cities' system.

Construction of the trunk sewers began late in 1959, shortly after the voters approved the proposal to establish the municipal water system. Many attribute the success of the election to the discovery and proof of the astonishing number of polluted wells. The Minnesota Health Department, in fact, attributed many of the minor digestive disorders suffered by Bloomington residents to the source of supply.

Sewer Assessments

The council established a minimum sewer-service charge of $1.50 per month or 50% of the winter water charge for all users. These receipts financed the construction of the final pumping station and force main which transport and lift the sewage to the Minneapolis-St. Paul system.

They also pay the operating costs. Installation of the large trunk sewers had first priority because of their location below other utilities in most streets.

Assessment of the trunks on an area basis provided an equitable solution. All property to be served by future lateral sewers connecting to these trunks paid a square-foot assessment of approximately 1.1 cents or 0.83 cents. The higher rate applied to all areas in one parcel under 12,000 square feet and the lower to all areas in excess of 12,000 square feet. This brought the typical lot assessment for a trunk sewer to about $125.

The 1,500,000-gallon tank flattens the short peaks and maintains uniform pressure.

Assessment of the sewer laterals was on a frontage basis and totalled approximately $450 per 80-foot lot. This included the connection from the main to within five feet of the property line. Lots which abutted the trunk sewer also paid this lateral assessment because the trunk doubled as a lateral in those streets.

Even before determining which source of water supply to use, local officials recognized the desirability of constructing water mains concurrently with the sewer laterals. This avoided the inconvenience of separate projects at different times and lowered the cost of street repair. By choosing for immediate construction

The fence is part of an intensive safety campaign that prevented the loss of toddlers' lives.

those portions of the alternate systems which required water mains of the same size, we were able to schedule enough of this construction to negotiate this trying period. We let contracts limited in area but including both sanitary facilities, establishing the responsibility for each location to one contractor.

Although the test wells we drilled indicated an adequate supply, they contained a high iron content and a hardness of 17 to 20 grains. The council chose to connect to the Minneapolis system because of a more definite long-term supply as well as being more economical for comparable qualities.

For the first three years, Minneapolis will supply water at an "on-demand" rate varying from 25 to 12 cents per 100 cubic feet per month. When we provide adequate ground storage, the large reservoirs will receive an entire day's supply in a 12-hour period and distribute it to the system as required. This "off-peak" rate will vary from 25 to 8 cents per 100 cubic feet per month.

Transmission Line

Constructing the 14,000-foot long transmission line of 36-inch Lock Joint concrete cylinder pipe was a speedy job. The council awarded two contracts for this work in July 1960, only a month after deciding which supply to use. By October 1, the line was transporting water to the village. During this interim period, other contractors installed water laterals in many locations. To allow the use of these systems, we arranged with the school district to supply water from their deep wells for these interconnected laterals until the Minneapolis supply became available.

The village assessed each lot benefitted by the installation of water laterals. This lineal-foot charge totalled approximately $400 for the average frontage of 80 feet. These receipts, plus the metered-use charge at the rate of 45 cents per 1,000 gallons with a $2 monthly minimum, are sufficient to redeem the bonds issued for the 36-inch transmission line and the construction of the Pittsburgh-Des Moines 1,500,000 elevated tank which irons out the hourly peaks. Since most streets

Realizing that they must retain good public relations during the difficult construction and assessment period, Bloomington officials adequately informed residents by a series of mailings. Some examples follow:

- **The Official Notice of Sewer and Water Plans—a four-page brochure which contains assessment information, the location of improvements and information about public hearings.**
- **Bloomington Plans a Water System—a similar pamphlet of smaller size which reprints the warning of contamination from the Minnesota Department of Health and which indicates that fire insurance rates will decrease by one-third upon adoption of a municipal system.**
- **Parents Beware—a warning to parents that all children are in danger if they play near an excavation.**
- **An Important Message—two sheets which note that the contractor will begin work in the recipient's block soon and which list the resident engineer's office location and telephone number.**
- **The Installment Plan—the list of estimated assessments for the recipient and a request for him to pay the total cost over a short term to avoid interest charges for himself and an explanation noting that this also reduces the bonded indebtedness of his village.**
- **Information About Connections—a four-page pamphlet from the Building Department that answers questions relating to the details and financing of the connections to the house, the resident's responsibility. It also lists the dates when various sections will be complete and the names of licensed plumbers.**
- **Assessment Notice—this lists the estimated cost to the recipient and an explanation of the methods which the village used to compute it. Also included is the telephone number of the Engineering Department for queries.**

were in fairly good condition prior to construction, the assessments also include an economical temporary road-mix surfacing placed on the existing sandy soil. Residents may petition later for more permanent street construction.

Prior to contracting for the installation of the water and sewer lines, we considered the problem which would result when the contractor's dewatering equipment would dry up individual wells. In the case of some deep sewers, the individual water supplies in large areas would fail concurrently. Either the city or the contractor had to undertake to supply these people during construction. If we made it the contractor's responsibility, he would certainly add amounts to his bid sufficient to cover the worst possible situation.

DETOUR
DETOUR

Some streets remained open to provide alternate routes for emergency vehicles.

Temporary Supply

Therefore, we took the responsibility of supplying affected residents. We obtained several stainless-steel tanks with capacities ranging from 1,600 to 2,000 gallons. Placing these at strategic locations in the dewatered areas, we interconnected them with 1½-inch plastic pipe laid on top of the ground past the homes whose wells were useless. Each owner then fastened a garden hose to the fitting on the plastic pipe and attached the other end to the well side of his pump. The pump supplied the pressure to service his plumbing units and we transported chlorinated water from Minneapolis to the temporary storage tanks by means of water trucks. The peak period found 200 residences connected to this temporary system at one time.

An intensive safety campaign, we believe, is responsible for our admirable record of no deaths resulting from the open excavations. Average figures supplied by the National Safety Council indicated that four children might lose their lives during construction. The campaign included mailings to all residents as well as repeated warnings in the newspapers and on the radio and television stations. To forestall any emergency, we provided alternate open streets for ease of access. Both Fire and Police Departments posted maps indicating the progress of construction and the routes available for quick action. ◄◄

Smallest public housing project

The action by the City Council, Portland, Me., authorizing the purchase of a single six-room house for rental to a family displaced in the Bayside urban-renewal area, apparently is the smallest public housing project on record. Although the Portland Housing Authority's administration of the property is a temporary arrangement to enable a family with limited finances to become home owners, it apparently has proved to be a welcome solution to a difficult problem.

At the time of the Council's decision, the family involved consisted of the parents and eight children from 4 to 21 years old. They were living in a dilapidated structure in the Bayside area. When one standard apartment after another had been refused them for the usual reason ("Too many children!"), it became apparent that this family would have to have a separate house. Efforts to find one at a rent they could afford were futile, as each house viewed was either too expensive or not available to a family of that size.

Finally, a house which previously had been on the market for $4,000, too expensive for the family's resources, was reduced to $2,200, as the heirs wanted to sell it quickly. The family felt it could handle this lower amount, and asked for help from the LPA. The LPA's relocation officer went to work on the case, and found that FHA would insure the house for a $2,300 mortgage under Section 221, but a faulty foundation condition and a few other minor deficiencies would have to be corrected first. The cost of these minimum repairs was estimated to be $333. It was also felt that additional improvements would be desirable. While the family could afford to purchase the house and make monthly payments, it did not have the resources to pay for repairs required by FHA. Actual expenditures for repairs have been $635.

Solution

After protracted negotiations produced no real solution, the LPA persuaded the city to agree to acquire the house, have the necessary corrective work done, rent it to the family with an option to buy, have the Housing Authority manage it as a public housing unit until FHA financing could be arranged, and then sell it to the family.

Six of the children have recently moved into the renovated house with their parents, the two eldest having left home as planned. They are all enthusiastic about the relocation. The LPA feels confident that the FHA will increase the valuation because of the improvements above the FHA minimum requirements and that title can be transferred to the occupants without delay. In the meantime, the property will be managed by the Portland Housing Authority as a non-federal public housing unit with rental payments of $25 a month. Transfer of title will be made at such time as the rental income has been sufficient to liquidate any expenditures made in excess of the FHA mortgage insurance.

The end result will be a successful relocation of a large family from a very substandard dwelling. More important, it means that the family will finally realize a dream of many years' standing when they own their own home at a price they can afford. ◄◄

CITY OF HAYS
SEWAGE TREATMENT
PLANT NO.1

Colorful gourd birdhouses placed along the fence and elsewhere attract wrens to the plant. Funds received through the sale of worms help support landscaping and grounds maintenance work.

Wrens and Worms Aid Sewage Plant

. . . by keeping the fly count down, attracting visitors to the plant and providing funds for plant beautification

By **ROY BINDER***
Superintendent of
Sewage Treatment
Hays, Kan.

Wrens and worms serve a good purpose at the older of the two sewage-treatment plants in Hays, Kan. It all started back in April 1940 when I took over the operation of the plant. We found from two to four inches of worms in the bottom of the trickling filter weirs, along with sand and other debris. In cleaning the weirs, we shoveled the worms and sand into a wheelbarrow and dumped these nuisances over the creek bank.

Several years later, during an extended dry spell, digging for worms became practically impossible. To help the fisherman's cause, we ran a notice in the local paper stating that worms would be given free to all who brought containers. The next day the demand for worms was so great that no time was left for plant duties.

To stop these interruptions we posted signs listing worms for sale at ten cents per can after 5 p.m. but this provided little help. A second notice followed stating that worms would be sold for 25 cents per can and that sale proceeds would finance the beautification of plant grounds. Today we have one of the most beautiful plants in the state.

The worms breed on top of the filter media and, as they grow, work down between the rocks. They seem to help purify the sewage and also keep the biological film growth on the stone in a porous condition and are responsible for the sloughing of the film.

The worms grow to about three inches long by the time they reach the bottom of the filter and make excellent fish bait. They appear to be a combination of round, flat, thread and segmented worms and require water to stay alive. This characteristic makes them good fish bait, for they continue to jump and move after being threaded on a hook.

We receive requests for these worms from fishermen and sewage-treatment-plant operators in other states but the need for water to keep them alive makes shipment to distant points difficult.

Birds vs. Flies

While DDT does control the psychoda fly and has been used with success in the past, it seems to be losing its effectiveness. Since I had noticed that wrens feed on the adult psychoda fly, we decided to solicit help from the many birds inhabiting the trees growing along the banks of Big Creek near the plant.

To provide attractive housing as an inducement for the birds to take up residence at the plant, we made wren houses from dried gourds grown on the plant grounds. We decorate some gourds in bright colors and leave others in their natural hue and protect them from weather with enamel or varnish. A ⅞-inch-diameter hole allows the wren to enter, but excludes other birds. We wanted wrens particularly because 90% of their diet consists of insects. Most other birds rely on seed. A large hole cut in the bottom, with the cutout wired back in place for the nesting season, simplifies cleaning. We placed these birdhouses along the fence surrounding the plant and in numerous other spots.

The birds took over. Since then we have experienced less psychoda-fly problems. The wrens might even eat the larvae if they were not frightened off the filter media by the rotary distributing arms.

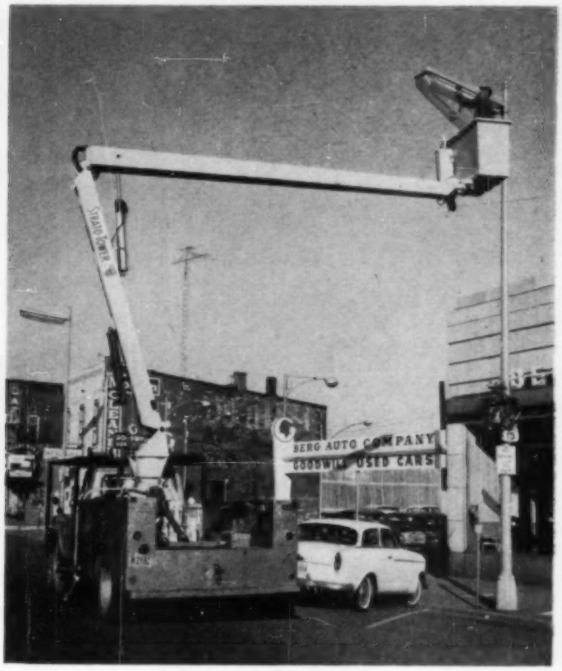
Even if the wrens should finally fail to control the psychoda fly, our efforts in making the birdhouses have not been in vain. Many persons come to the plant primarily to see the colorful gourd birdhouses and secondly to enjoy a tour through the plant. ◄◄

---

* Mr. Binder has been superintendent of sewage treatment in Hays, Kans., for the past 21 years. In 1951 he received the Arthur Sidney Bedell Award for outstanding service from the Federation of Sewage and Industrial Wastes Association.

Faster, Safer, More Efficient

Aerial tower in Marshfield, Wis., pays for itself and returns a dividend in the first year



The new truck tower can reach across angle-parked cars to make the servicing of street lights an easy task.

By changing from climbers, ladders, rope life-lines and other traditional equipment to a 45-foot hydraulic tower, Marshfield, Wis., (population 13,000) has cut operating costs of its electric and water utility 50%, has paid for the cost of the new equipment and accessories in six months, and has returned a savings of more than $3,000 annually to city taxpayers.

The regular services of this municipal utility include trimming many old shade trees to clear lines for electric service, cleaning and replacing mercury-vapor and fluorescent street lamps, working on high-voltage wires and transformers and installing community street decorations at holiday time and for special events.

Tree trimming used to be a costly, time-consuming service. A five-man crew needed ladders, rope-rigged lines, and tree saws. The process was slow and cumbersome. The men complained of the dangers of climbing high trees, the citizens complained of tree mutilation. To remove foliage that neared the power lines, crews were forced to saw off entire limbs; as a result, trees had ugly gaps in the branches, as testified to by complaints of property owners. In addition, the haul-away debris was expensive in labor and equipment time, because the large branches removed were difficult to handle, load and dump.

Moreover, the men had difficulty cleaning or replacing street lights in the business district because cars were parked at an angle. The same problem arose when they installed street decorations at Christmas time or during festivals.

In work on transformers, such as the use of "hot-line clamps" in tying the transformers to a high voltage line, they lost much time taking necessary precautions, and worried about the risks.

Aerial Tower

What was needed was a machine which could maneuver the workman safely to the exact point of the job. After careful comparison, the city bought an Ottawa Strato-Tower, a product of the Equipment Division of the Young Spring & Wire Corporation. The city utility heads decided on a 45-foot model with leveling-grade truck bases. Telescopic outriggers maintain balance on the six-cylinder, one-and-one-half-ton International truck on which the tower is mounted. The tower, operated by hydraulic controls, rotates a safety insulated fiberglass bucket to 280 degrees in positions of extreme reach. Controls are operated from above and below, assuring safe descent under all conditions.

After the installation of the portable tower, results were, in the words of "Tony" Adler, assistant superintendent, "magic." Operating-time cost dropped 50%; service improved; the public made fewer complaints; and 75% less personnel problems developed.

The unit eliminated three problems instantly. Tree-trimming crews were cut from five men to two, releasing three men for other work. The man in the bucket, being lifted to the exact point of operation, was able to use a clipper for trimming limbs for wire clearance, thus saving the appearance of the tree and expensive haul away. Now, only the leaves and twigs that most closely encroach on the power lines are amputated; the result is a neat, even trim job that eliminates the unsightly gaps of former times. Haul away is faster, simpler, because the smaller brush is easier to load and dump.

In repairing wires on high-voltage lines, time previously used in insulating or covering up exposed wires so the lineman could climb over and around them in safety, was saved. Time was cut in half on street-light washing and repair; and a like savings was noted in installing holiday and other decorations. ◄◄

Buyers inspect cars and trucks available at auction.

Scrap like this netted Phoenix $12,000 in one sale.

Phoenix Turns Auctioneer

. . . and gains financially while disposing of unwanted cars, trucks and scrap

By **S. E. VICKERS***
City Manager

The City of Phoenix, Ariz., recently held its most successful public auction for surplus and scrap metal. Bidders purchased 69 pieces of automotive equipment for $30,455 and paid another $12,000 for several hundred tons of scrap metal. The sale was conducted by Bert A. Gragg, purchasing agent, Division of Purchases and Stores.

The city sells each item of equipment on the spot, as is, to the highest bidder. Walter B. Morrison, assistant purchasing agent, acts as auctioneer. The division holds sales on Saturday afternoons at the city salvage yard, in order to attract as many bidders as possible. Before scheduling an auction, the division analyzes the market for used automotive equipment, as well as the market for scrap.

At the salvage yard, prospective bidders may freely inspect the equipment and scrap to be sold. Scrap metal is segregated by class and sold by the pile. Copper wire is burned free of insulation and copper and brass items are sold by the container. If items in the scrap piles have a possible value beyond scrap, such as truck beds and axles, we remove and auction them separately.

The Division of Purchases and Stores lines up all automotive equipment according to make and model and cleans the vehicles inside and out before the auction, placing them one door-length apart to facilitate inspection. The year and number of cylinders are marked on each windshield. Prior to the sale, we raise the hoods of the cars and trucks and start the engines to assure buyers that the equipment is in operating condition.

Thorough Publicity

A large part of the success of the Phoenix auctions must be attributed to the thorough publicity which is given to each sale. The Division of Purchases and Stores maintains a mailing list which contains over 1,000 names of interested bidders, both in Phoenix and outside the city. We usually get free publicity from radio and television stations, and the daily newspapers carry articles announcing the sale.

More than 1,200 people attended the most recent auction. Many of the bidders were dealers, including some from out of state. The majority, however, were individuals looking for a second car or a used pickup truck. At the latest auction, we realized an average of $441 each, from the sale of vehicles ranging from 1950 to 1959 models. A 1959 Plymouth eight-cylinder station wagon, with more than 100,000 miles of use brought the highest price among vehicles, going for $875. Vehicles are recommended for disposition as surplus by the Division of Mechanical Maintenance, W. W. Rote, Superintendent.

By charter requirement, the city must sell its surplus equipment at public auction, rather than trading it in on the new replacements. The Division of Purchases and Stores reports that it is convinced that the city makes more money through a well-advertised public auction than would be gained by trading in the equipment on new purchases. The number of buyers who return year after year to purchase more equipment is proof of their confidence that they will get their money's worth at a Phoenix public auction. ◄◄

---

* Mr. Vickers has been city manager of Long Beach and Vallejo, Calif., and since March city manager of Phoenix, Ariz. He was president of the City Managers Association (ICMA) in 1957-58.

MODERN ®CHEKAR
ULTRA-SONIC VEHICLE DETECTION SYSTEM

GIVES NEW
HAMILTON, ONTARIO GARAGE
MAXIMUM PARKING FACILITY

ENTRANCE
EXIT
EXIT
CHEKAR
HOTEL

Reversible-Entrance-Exit Lane (top inset): Button on CHEKAR master control panel actuates entrance-exit sign, controls ticket dispenser, changes count from in to out.

Master control panel (lower inset), with "Parked Vehicle" and "Total Vehicle" information on display.

Completed late in 1960, the 4-level, 550-car capacity Market Square Carpark is the latest word in modern parking garages . . . and the first in Canada to use CHEKAR Ultra-sonic vehicle detection equipment.

The CHEKAR parking system provides efficient operation for parking patrons and operating personnel. CHEKAR also assists in special operational requirements which include variable ground floor use (farmer's market 3 days a week, parking the other days).

CHEKAR has helped to maintain a high level of good will on the part of this progressive metropolitan community's motoring public. The driver enters the garage . . . parks easily . . . and leaves with a minimum of delay.

HERE'S HOW CHEKAR HELPS PROVIDE MAXIMUM FACILITY IN THE MARKET SQUARE CARPARK

- Automatically actuates ticket dispensers at count-in locations.
- Automatically provides *total count* over an extended time period, as well as *differential count* of vehicular entrances and exits . . . from day to day, or any desired periods.
- Automatically actuates information signs when total vehicle capacity is reached, automatically turns off ticket dispensers.
- Provides manual override control of signs and ticket dispensers, as may be desired.

Write for additional information and the name of your local CHEKAR distributor.

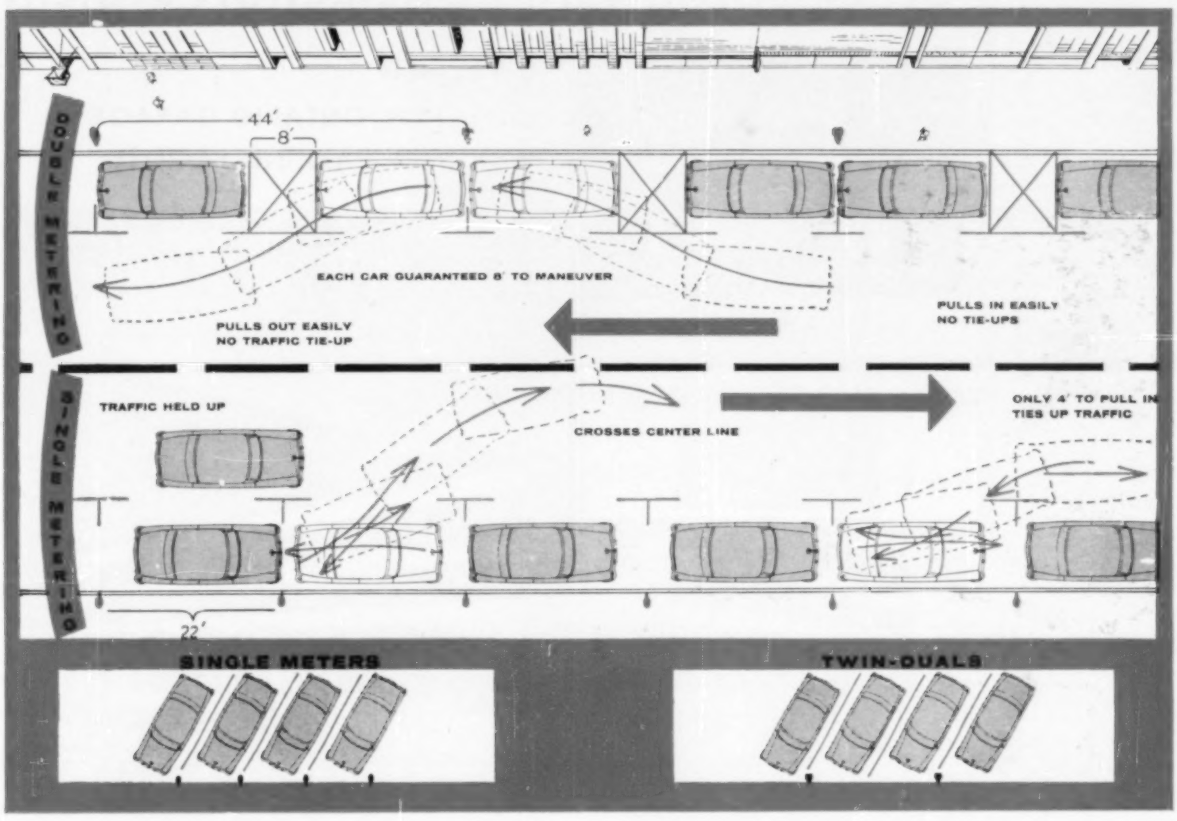
CANADIAN DISTRIBUTOR: CAMERON, GRANT INC., 465 ST. JOHN STREET, MONTREAL, QUEBEC

VTC VEHICLE TRAFFIC CONTROL DIVISION

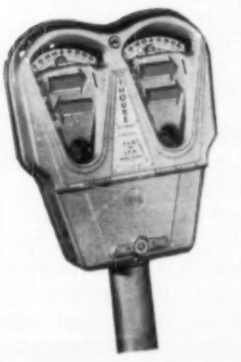
ULTRA-SONIC CHEKAR VEHICLE DETECTION AND CONTROL SYSTEMS FOR TRAFFIC AND PARKING

GENERAL RAILWAY SIGNAL CO. ROCHESTER 2, NEW YORK 3144

HOW TO MAKE THE MOST OF EXISTING PARKING SPACE


DOUBLE METERING
44'
8'
EACH CAR GUARANTEED 8' TO MANEUVER
PULLS OUT EASILY
NO TRAFFIC TIE-UP
PULLS IN EASILY
NO TIE-UPS
SINGLE METERING
TRAFFIC HELD UP
CROSSES CENTER LINE
ONLY 4' TO PULL IN
TIES UP TRAFFIC
22'
SINGLE METERS
TWIN-DUALS

Only Twin-Duals get the most out of existing parking space and reduce metering costs 27% in the bargain



The drawing above shows clearly how Twin-Dual Parking Meters insure eight full feet between cars while single meters often reduce space to only four feet. Note too how traffic flows more easily and safely when cars are assured adequate room to maneuver into and out of the parking spaces.

But greater utilization of parking space is only part of the Twin-Dual story. Since Twin-Duals are two separate meter mechanisms in a single case, initial cost is lower. And installation costs are reduced because only half as many meter stand installations are required. Twin-Duals also reduce collection and inspection time . . . every other meter "stop" is eliminated.

There are lots of sound, proven reasons why your community should investigate the economy and efficiency of Twin-Dual metering. Send the coupon for complete details in the new booklet on Twin-Dual Parking Meters. Dual Parking Meter Co., Subsidiary of Rockwell Manufacturing Co., Pittsburgh 8, Pa.

DUAL PARKING METERS
another fine product by
ROCKWELL

Send for this free booklet today

☐ **Please send complete information on Twin-Duals.**
☐ **Please have your representative call.**

Name____________________ Title____________
City________________________________
State_______________________________

TRAFFIC CONTROL

A large intersection, created by two streets with 60-foot median strips, utilizes the buttons to guide traffic across into a narrower street on the opposite side.

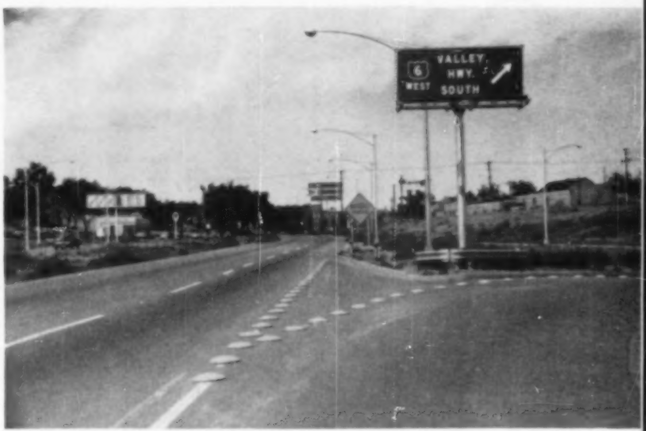
We "button down" good traffic practices

By **G. ROTHWEILER** and **R. RUTTER**
Traffic Engineering Section
Department of Public Works
Denver, Colo.

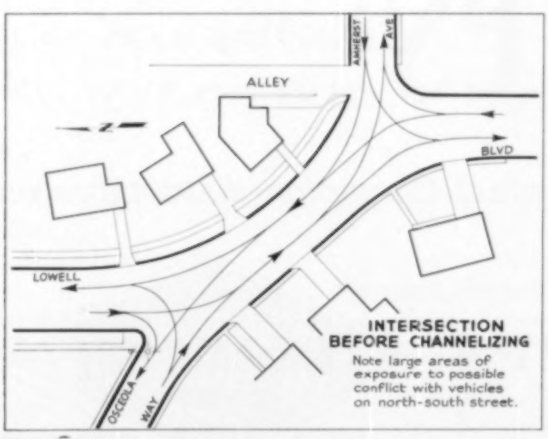
Many practical traffic engineers have said that "you can do more with a gallon of paint than with any other type of traffic-control device." Here in Denver we augment the use of paint with inexpensive steel traffic buttons which keep motorists in their proper lanes with a minimum of disturbance to traffic flow and a maximum amount of success.

These large buttons (14¾" diameter by 2½" high) are placed on some of our more important arterial streets to channel vehicles into proper turning lanes and to "store" turning vehicles out of the way of through traffic. They also serve as a warning to a motorist crossing a double yellow line, but do not

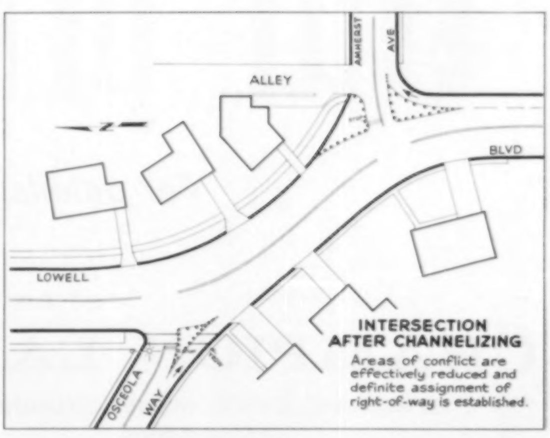
(Continued on page 109)


6
WEST
VALLEY
HWY.
SOUTH

The buttons guide traffic around a mandatory right turn leading to a cloverleaf.


N
AMHERST
AVE
ALLEY
BLVD
LOWELL
OSCEOLA
WAY
INTERSECTION
BEFORE CHANNELIZING
Note large areas of
exposure to possible
conflict with vehicles
on north-south street.

This "too-large" intersection, with dangerously conflicting traffic lines . . .


N
AMHERST
AVE
ALLEY
BLVD
LOWELL
OSCEOLA
WAY
INTERSECTION
AFTER CHANNELIZING
Areas of conflict are
effectively reduced and
definite assignment of
right-of-way is established.

. . . gets "buttoned down" safety islands that make traffic more orderly.

Four . . . not three .
The United
of Standards

Champion is one of
. . . and has
more than

Specializing in industrial
Champion
into retail

Our prices reflect the
compare our
on any of

For details, contact Champion distributors or .

Lamp Specialists Since 1900

CHAMPION LAMPS

LYNNWAY, LYNN, MASSACHUSETTS
LYnn 3-2000

CHAMPION
LAMPS

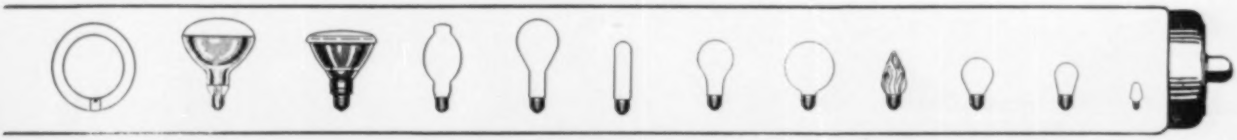
. . lamp lines carry
States Bureau
quality approval.

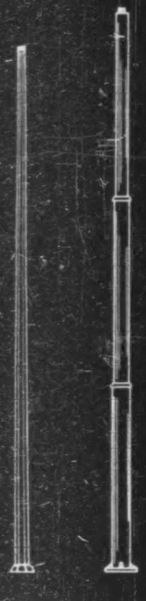
these approved lines
been for
twenty-five years.

and commercial lighting,
does not have to pour millions
lamp and appliance merchandising.

saving. It will pay you to
discounts with those you are getting
the other three approved brands.

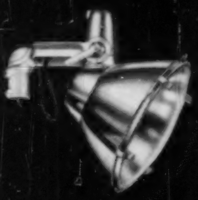
. . Mr. Bill Ferris at our Lynn plant.


Fluorescent • Incandescent • Mercury Vapor • Infra-Red



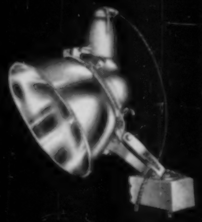
No. 560-30-3 No. 115-40-5B
RIGID POLES

No. 199-Series
HIGH STRENGTH HINGED POLES

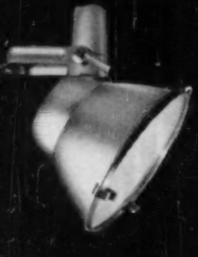


No. 4213-P
ALUMINUM FLOODLIGHT

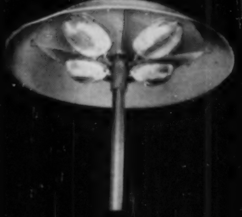
No. 3807
ELIPTOR FLOODLIGHTS



No. 2001 REAR
SERVICE FLOODLIGHT



No. 4411-P
ECONOMY FLOODLIGHT



No. 5442
ULTRA-LITE

No. 5452
QUAD-OVAL LUMINAIRE

Everything in outdoor lighting equipment from one reliable source

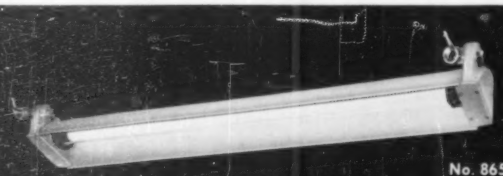
Send for the comprehensive Revere Catalog that lists hundreds of outdoor lighting products, applications and specifications

Revere's 136-page outdoor lighting catalog shows you the industry's widest range of outdoor fluorescent, incandescent and mercury luminaires, as well as poles and accessories. Revere equipment is *design-matched* for best appearance and peak lighting efficiency . . . *structurally-matched* for strength, balance, trouble-free installation and easy maintenance. Write today for your copy of this easy-reference catalog of outdoor lighting equipment.

Revere ELECTRIC MFG. CO.

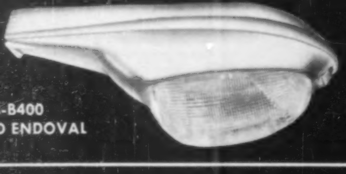
OUTDOOR LIGHTING

Revere Electric Mfg. Co. • 7420 Lehigh Avenue • Chicago 48, Illinois (In suburban Niles)
Long Distance Phone: NI les 7-6060 • Chicago Phone: SPring 4-1200 • Telegrams: WUX Niles

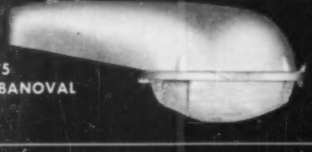


No. 8650 Series
FLUORESIGN LUMINAIRE

No. 9946-V
HIGH LEVEL AREA-LITE



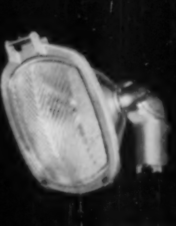
No. 2633-B400
UNITIZED ENDOVAL



No. 2513-B175
UNITIZED URBANOVAL

No. 2274
ENDOVAL

No. 2501-B250
URBANOVAL



No. 6823-NFH
QUARTZOVAL "500"

(Continued from page 105)

provide a bump large enough to make him lose control.

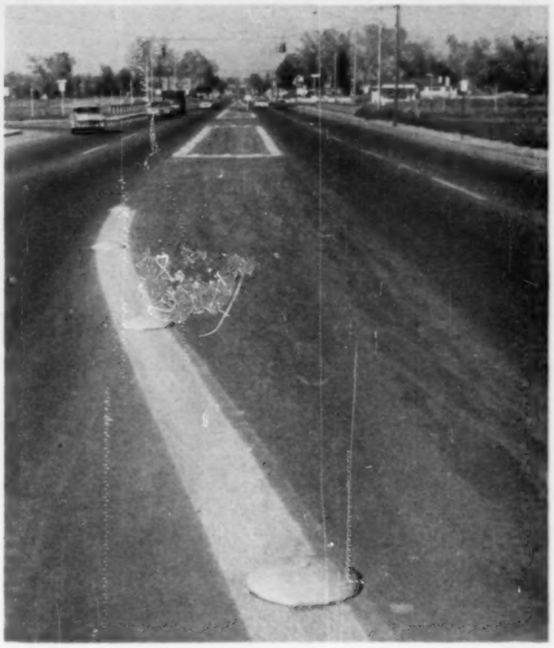
The buttons usually take the geometric form of permanent curb channelizing. They are, obviously, much less expensive than permanent curbing; if we discover a defect in the street's traffic design, we can correct it easily with the buttons. Many times, buttons have preceded the construction of curb and gutter channelization to serve this purpose.

Originally, Denver started its "buttoning-down" program with pre-formed, wire-reinforced concrete buttons. Because of Denver's freeze-and-thaw climate, the concrete buttons were soon reduced to rubble on some of the more heavily traveled streets. We then discovered that a steel button was available from a local dealer as a "war-surplus" item. Although no one knows its official wartime use, we believe they were used as ballast in large bombs. Just as the Bible counsels that we should beat our swords into plowshares, we change bomb parts into life-saving traffic guides.

Although we have found a number of uses for the traffic button, they present some problems which must be recognized. These problems are in the fields of street cleaning and snow removal. Inside the button islands the power street sweepers have trouble because the brooms bounce over the button tops. These areas, therefore, require expensive manual sweeping. However, we are investigating this problem with the sweeper manufacturers and should arrive at a solution soon.

Snow removal in button-channelized areas has also created problems of upturned buttons and broken grader blades. This has been greatly reduced by supplying our Street and Highway Department with maps showing all buttoned areas to warn the workers.

Like most other large cities in the nation, Denver is experiencing difficulty in obtaining sufficient money for capital improvements to handle the ever-increasing traffic needs of its metropolitan area. The traffic button, when used wisely, has certainly helped to "stem the tide" and control it. ◂◂



The buttons create a "buffer island" to separate opposite-flow traffic and to provide sufficient "storage" for a left-turn pocket.

Pavement-edge markings reduce accidents

State highway departments report widespread use of traffic lines that indicate the pavement-edge; some use them on all major highways. Kansas has placed pavement-edge markings on 453 miles of highways. Most of the highways included in the program are two-lane and have bituminous surfaces on widths of 20 feet or more.

After the initial marking program, we decided to compile some "before-and-after" accident data. In our first year of study in 1957, we compared accident records on eight sections having no edge markings, totaling 88.1 miles, against twelve sections with the edge markings in 1958 totaling 97.68 miles. The edge-marked pavement showed:

- **a 21% reduction in total accidents.**
- **a 26.2% reduction in personal injuries.**
- **a 59.4% reduction in fatalities.**

In the fall of 1959, the Kansas Highway Commission and the U. S. Bureau of Public Roads entered into a contract to conduct a research study of possible motor-user benefits to be derived from the use of pavement-edge markings.

We prepared a controlled type of direct-accident comparison study for the survey, selecting 29 pairs of study sections totaling 384 miles of rural highways that had not been previously edge-marked. We placed the markings on half or 192 miles (marked sections), and left the remainder unmarked for the duration of the survey period. The latter are "control" sections, which were employed to cancel out year-to-year variations in accident rates not associated with the edge markings themselves.

We then analyzed all reported accidents on each test and control section both before and after edge marking. The "before" period was the first seven months of 1959 and the "after" period was the first seven months of 1960.

Research teams summarized the accident reports by number of persons injured and number of persons killed, location, type of collision, light condition, pavement condition and property damage.

The accident studies showed that there was a 36.6% decrease in the number of accidents at intersections and driveways after edge marking of two-lane rural state highways. In seven months of 1960, comparison of "control" and "marked" sections showed a 42.4% decrease.

A. J. Basile
Engineer of Traffic Services
Kansas Highway Commission

traffic control by RADIO

"Splendid results throughout the city and particularly on the main arteries . . ." are being achieved in Washington, D.C. with the new Radio Traffic Control System, according to Engineer Commissioner Alvin Welling.

Motorola now offers you greater traffic control efficiency, flexibility and economy—city-wide or individual intersection control from a central station.

Efficiency . . . high speed, high capacity automatic programming supplemented by instantaneous pushbutton control of any function.

Flexibility . . . programs can be changed instantly when required. Intersection units can be easily relocated. Expansion simply requires the addition of intersection units.

Economy . . . radio provides control at less cost per intersection and at far greater distances from the central control point.

Reliability . . . completely transistorized intersection units, combined with modular plug-in construction, facilitate servicing, interchanging of components, and additions.

Proved on-the-job, radio control stands ready to help you meet rapidly mounting traffic problems, simply and economically. Let us show you how.

MOTOROLA

RADIO TRAFFIC CONTROL

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Illinois
A Subsidiary of Motorola Inc.

Aberdeen scooter-patrols parking violators

This unit paid for itself within five months from increased revenues from parking-meter violations.

A three-wheel utility vehicle used by Aberdeen, S. D., to check city parking meters did such a good job of increasing revenues from meter violators that it paid for itself within five months.

The vehicle that boosted the efficiency of Aberdeen's meter patrol is a compact gasoline-powered Cushman Truckster. Only 48 inches wide and 102 inches long, the vehicle slips in and out of traffic and can be parked out of the way on busy streets—for instance, in the "leftover" space between two parked autos.

Aberdeen's Assistant Chief of Police A. C. Braunstein reports that operating cost has been very low and a gallon of gas goes a long way (up to 50 miles per gallon), even under the difficult conditions of stop-and-go driving. The Truckster has a top speed of 35 miles per hour. ◄◄

Where curb parking is an acute problem

Akron, Ohio (population 287,659)—We have banned curb parking on two of our main thoroughfares, one from 8 A.M. to 6 P.M., the other 7 A.M. to 6 P.M. *Hubert B. Woodling, City Traffic Engineer.*

Ashville, N. C. (58,747)—Ashville has abolished curb parking on central business district through streets, allowing parking on minor streets. *Paul M. Dutcher, Captain, Traffic Department.*

Cleveland, Ohio (869,728)—Cleveland has eliminated most of the parking at the curb in the downtown business district and all of the curb parking on arterials in all the neighborhood business districts during the rush hours. American cities are today fast reaching the point where all parking will be eliminated and the streets returned to moving traffic. *Robert Kelly, Commissioner of Traffic Engineering and Parking.*

Corpus Christi, Texas (165,724)—We have one project of a block and a half where a large department store requested the removal of parking meters, planted trees in the sidewalk and in general dressed up their store front on two streets. It has been well accepted by the public but adjacent merchants hated to see all the parking spaces go. *Paul W. Rice, Director of Traffic Engineering.*

Council Bluffs, Iowa (54,208)—We have eliminated 30% of our curb parking in the central business district and are continually removing more as we make off-street parking available. I do not think that it is necessary in most cases to remove all street parking. Commuter parking can be controlled by rigid meter enforcement and with the aid of rush-hour parking bans. I feel that parking should be removed only when it is considered intolerable for public safety and a hindrance to the flow of traffic. *Gary E. Mathias, Acting Traffic Engineer.*

Dallas, Texas (672,424)—We have prohibited parking during the rush hours on most of our principal downtown streets. We would probably prohibit parking at all times if it weren't that loading must be done in front of the stores at the curb as there are virtually no alleys in the central district. *W. H. Carsten, Director, Department of Traffic Control.*

Grand Rapids, Mich. (175,344)—Parking is prohibited on the two main streets in the central business district and during peak hours on other streets used as feeders. I suggest every time a new parking lot is put in, parking can be removed to get the traffic to that lot for a period until the routes are sufficiently cleared to start building up extra parking spots. *C. L. Simmons, City Traffic Engineer.*

Kalamazoo, Mich. (81,823) — We have established parking regulations prohibiting parking on certain downtown streets where traffic demands made it necessary. *Robert B. Carroll, City Traffic Engineer.*

Little Rock, Ark. (105,737)—About 50% of curb parking has been abolished. *H. DeNoble, City Traffic Engineer.*

Memphis, Tenn. (491,710)—Some curb parking has been abolished, particularly on the main street in the central business district, one parallel business street, and other streets for one or two blocks. The prohibitions are in effect from 9:00 A.M. to 6:30 P.M., except Sundays and holidays. Loading is permitted in the prohibited parking zones. Downtown off-street facilities are provided by both private enterprise and the

(Continued on page 113)

Look at Plymouth now!
PLYMOUTH

Quicker than ever—still the one they don't outrun!

There's power aplenty in a big, full-size Plymouth. Just say "scat" and Plymouth will surge to cruising speed as much as 10% faster than last year.

And what a pleasure to be behind the wheel of a Plymouth! Smooth and responsive. Because Plymouth's powerful Golden Commando 305-hp engine (standard equipment on the Pursuit Special) delivers all the power it takes to please or pass.

Speaking of spunk, Plymouth Police Specials ache to get their wheels into action: high-speed chases, easy-does-it suburban patrolling, touch-and-go traffic—everything that takes in Police duty, regardless of whether you're just cruising the highway or taking someone in tow. *Any* situation.

Yet, with all their power, high-speed performance and excellent maneuverability, Plymouth Police Specials are economical to maintain and operate. Self-adjusting brakes. Change oil only half as often as last year. 32,000-mile lubrication on major chassis points. And up to 7% better gas mileage.

So if you want high performance, good looks and money-saving economy, talk it over with your Plymouth dealer. Get full details on the beautiful difference in the low-price field!

'62 Plymouth Puts Economy First

Up to 7% better gas mileage than last year · New full-unit construction for long life and low maintenance · New galvanized sills in addition to a 13-step dip-or-spray process for lasting body protection · New 32,000-mile lube cycle on major chassis points · Self-adjusting brakes · New half-as-often oil changes · Battery-saving alternator

---

THE NEW PLYMOUTH

Quality-engineered by Chrysler Corporation

(Continued from page 111)

City of Memphis. One municipal off-street parking lot with 915 spaces is controlled by coin-operated electrically powered gates. In addition, a 700-car garage was built by the city and is leased to a private operator. *W. P. Huntzicker, Traffic Engineer.*

Philadelphia, Pa. (1,971,239)—Parking is prohibited on practically all of the major thoroughfares, as these are only 26 feet in width. There is a "no parking" regulation on one side and a "no stopping" restriction on the other, the thought here being that the "no parking" side is available for the loading and unloading of commercial vehicles only, with the other side being continuously open for traffic movement. *H. Bruce Murray, Associate Traffic Engineer.*

Riverside, Calif. (83,714)—The city has a number of monthly lots and all-day metered lots for commuters. There are no all-day free spaces available within 3 blocks of the central business district. Riverside operates 28 off-street parking lots and has two four-level garages and four more lots under construction. We abolish curb parking only where necessary for capacity and traffic movement, on various streets within the CBD. *William D. Flye, City Traffic Engineer.*

Roanoke, Va. (96,515)—Roanoke has made substantial progress in the last ten years in reducing curb parking in the central business district. On the basis of tentative information obtained from a comprehensive traffic and parkway survey conducted during the past summer, it will be necessary to continue this trend and continue to remove curb parking. Already the effects of "Bus Stops" and curb-side business "Loading Zones" are beginning to become the major problem as parking usage at the curb is reduced. *James D. Sink, Superintendent, Traffic Engineering.*

Sacramento, Calif. (190,273)—Sacramento has prohibited curb parking entirely in a few blocks where traffic congestion has indicated need for additional capacity. In other blocks a peak hour prohibition has been installed on the same basis. *D. F. Stevens, City Traffic Engineer.*

San Antonio, Texas (583,690)—The City of San Antonio prohibits parking on 21 blocks of three main downtown streets. These streets are all one-way streets, 40 feet wide and carry large numbers of transit buses. Truck loading is permitted on the right side from 6 P.M. until 10 A.M. and on the left side from 6 P.M. until 4 P.M. This provides two moving lanes until 10 A.M., three lanes from 10 A.M. until 4 P.M., and four lanes from 4 P.M. to 6 P.M. It also provides an excess amount of loading space which makes it possible for trucks to get into a space with a minimum of maneuvering in traffic lanes. This plan has been in operation four years and has been well received. *Stewart Fischer, City Traffic Engineer.*

Santa Ana, Calif. (99,564)—Curb parking has been prohibited on portions of Main Street where curb-to-curb width is 46 feet. This provides four moving lanes during 10 A.M. to 9 P.M. Peak hour curb parking ban is being considered for other business districts. *R. Henry Mohle, Associate Civil Engineer.*

San Jose, Calif. (201,490)—This city has prohibited parking in the central business district on streets where parking caused problems. Long-range planning calls for elimination of all curb parking in the central business district. *Arthur B. Philpott, Traffic Analyst.* ◄◄

Expressway has reversible center lane

The 5½-mile section of Interstate 70, known as the Mark Twain Expressway, is one of the first limited-access highways to utilize a "reversible" strip between its three-lane channels. The interior strip, segregated by malls from the outer sections, provides two additional reversible traffic lanes for one-way traffic flow at critical commuter hours.

To assure maximum safety and flow for this section, which runs within St. Louis, Mo., city and state officials agreed to install mercury-vapor lighting.

The installation on the 1½-mile section between O'Fallon Street and Branch Street consists of 221 General Electric M-400 luminaires. Although the installation cost, about $125,000, is part of the federal financing of the expressway, the responsibility for the operation of the lighting system rests on the City of St. Louis.

The luminaires are mounted 30 feet above the roadway on concrete poles, which are staggered about 170 feet apart. Poles are set back about 10 feet and the brackets are 4 to 15 feet long. The calculated average maintained illumination level is one footcandle. The lights operate off a 480-volt underground distribution system. ◄◄

The two-lane median roadway provides an advanced-design "reversible" feature for the Mark Twain Expressway. Traffic may be directed either way on the middle lanes, depending on commuter hours and traffic densities.

When Tacoma's streets were dimly lit, they invited night-time accidents and crime.

Public support brings new lighting

By **YOSHIO KOSAI**
City Traffic Engineer
Tacoma, Wash.

Besides providing a more cheerful atmosphere for those who must use the streets at night, new lighting installations in Tacoma, Wash., have minimized traffic accidents and crime and drastically reduced fatal accidents.

A report on the urgent need for street lights presented by Mr. Robert E. Schmidt, former traffic engineer of the Public Works Department, with the cooperation of Roy Weston, illumination engineer of the Public Utilities Department, pointed out that pedestrian traffic accidents during the hours of darkness were a serious problem. So when street-lighting programs were presented to Tacoma's 148,473 citizens in 1954 and 1958, the concerned populace wholeheartedly approved bond issues on both occasions for a total of $2,500,000 to provide the needed improvements.

Lighting Poor

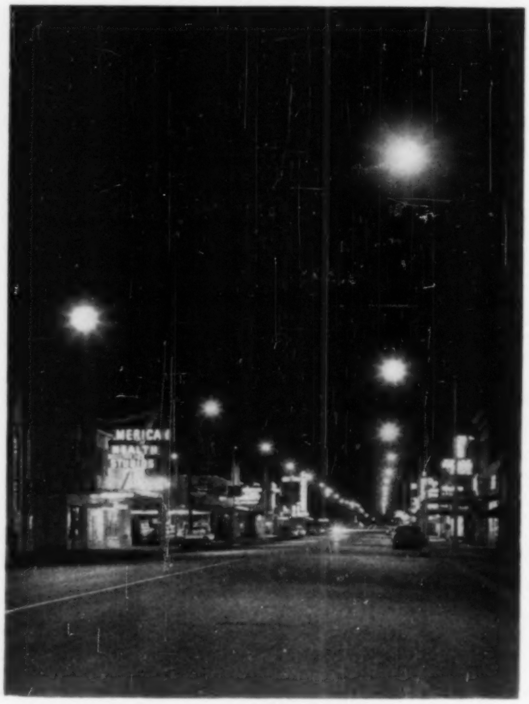
Street-lighting conditions in Tacoma in the post-World War II period were not very good. With the exception of our downtown area, which was relighted in 1949 to national recommended standards, existing facilities were obsolete and naturally could not provide the quantity or quality of lighting needed for increasing night-time pedestrian and automobile traffic on our streets. Existing facilities consisted of post-top luminaires employing 2,500-lumen lamps mounted on old 12-foot concrete standards, 4,000-lumen lamps mounted on wooden poles at intersections and a few sodium-vapor installations for important streets.

The approval of the 1954 bond issue resulted in a three-year program for relighting 85 miles of arterial streets. We utilized as many existing wooden poles as possible on a majority of our arterial streets. On narrow roadways up to 35 feet in width, existing poles were used in lighting from one side only, and on the wider streets, poles on both sides were used in a staggered arrangement.

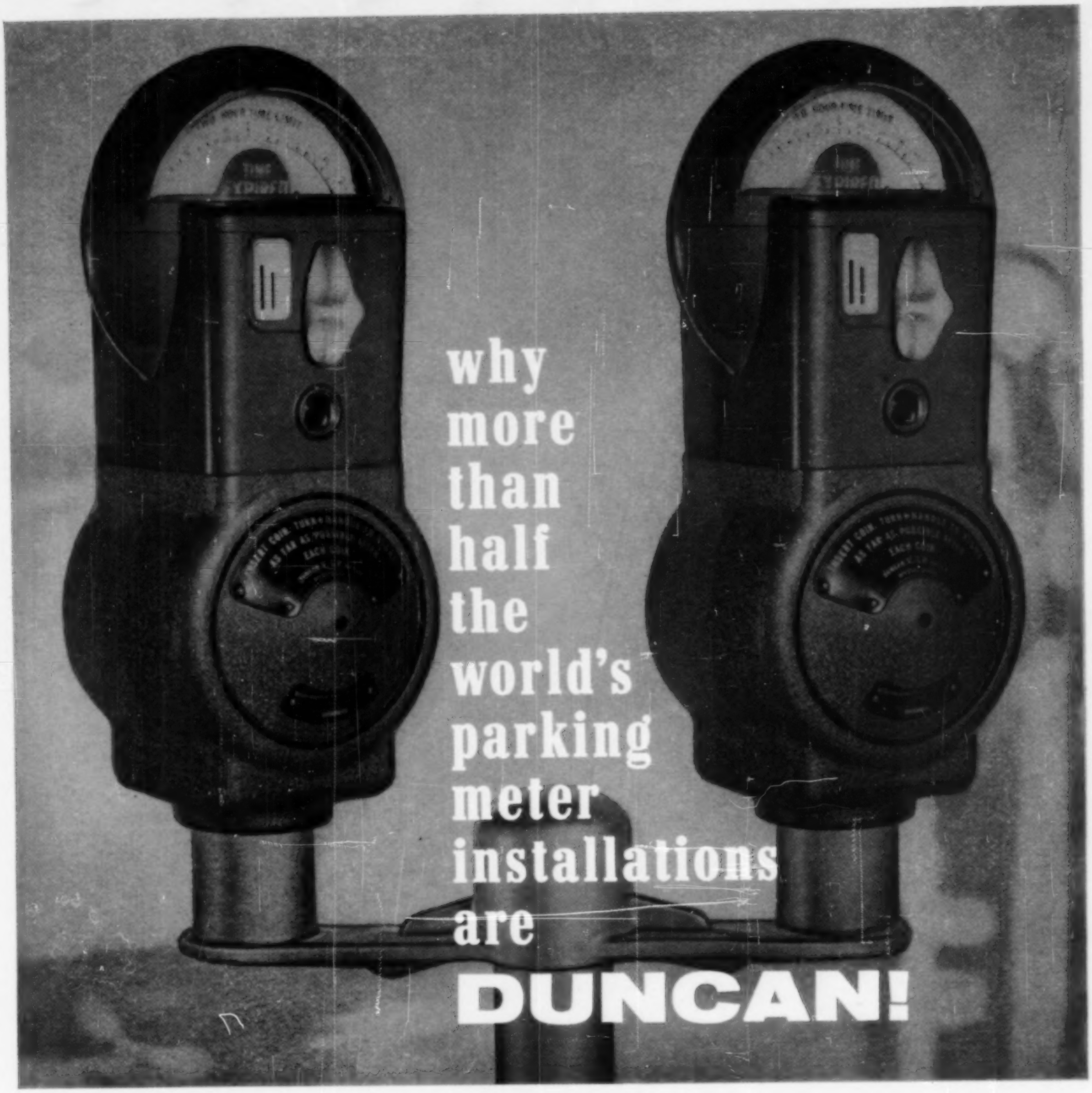
As the light source, we used the 400-watt, 21,000-lumen mercury-vapor lamp, operated in a horizontal position with refractor-type luminaire at a minimum mounting height of 30 feet above the roadway. All luminaires employ eight-foot aluminum brackets, with spacing units from 125 to 150 feet. Circuits are multiple two-wire 240-volt overhead. For streets without existing poles, ornamental prestressed-concrete 30-foot standards with multiple two-wire 240-volt underground wiring were installed. The standards are manufactured locally by the Concrete Technology Corp.

The approval of the second bond issue in 1958 brought completion of our arterial street lighting and also helped to defray part of the cost of replacing

(Continued on page 117)



After the first new street lights were turned on, night-time fatal pedestrian accidents were reduced.



This outstanding record has been achieved as the result of Duncan's perpetual research and engineering development programs.

By anticipating future municipal parking requirements Duncan repeatedly has been first to offer modern, efficient equipment geared to meet up-to-the-minute municipal demands.

Newest development is the Duncan V.I.P. (Vault Insured Protection) meter illustrated above. World's only vandal-resistive meter strong enough to combat todays growing meter vandalism problems.

Cities previously plagued with sustained losses in meter revenue, replacement parts and collapse of parking control programs due to forceful entry and theft from ordinary meters, now report substantial increases in meter revenues and effective curb parking control **from the same areas.**

Look to the Duncan V.I.P. meter to achieve and protect your Citys' anticipated annual meter revenue. Available in all curb and off-street rate combinations utilizing pennies, nickels, dimes, quarters and tokens.

DUNCAN
PARKING METER
DIVISION OF NAUTEC CORPORATION
835 NO. WOOD STREET · CHICAGO 22, ILLINOIS

Fill out coupon for Demonstration and complete details . . . Write today.

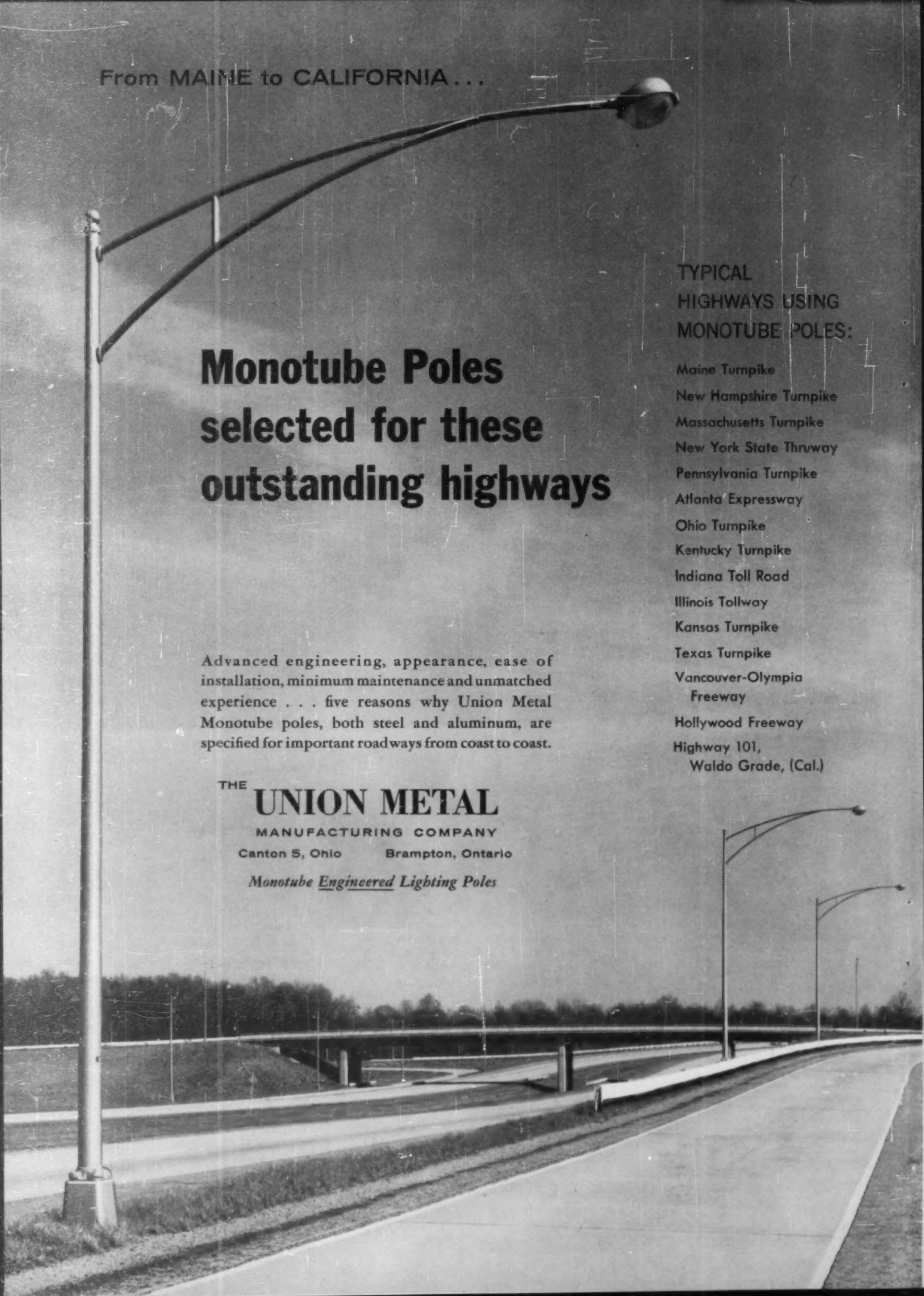
DUNCAN PARKING METER
Division of Nautec Corporation
835 NO. WOOD STREET
CHICAGO 22, ILLINOIS

NAME______________________________

ADDRESS___________________________

CITY______________ZONE____STATE_______

TITLE______________________________



From MAINE to CALIFORNIA . . .

Monotube Poles selected for these outstanding highways

Advanced engineering, appearance, ease of installation, minimum maintenance and unmatched experience . . . five reasons why Union Metal Monotube poles, both steel and aluminum, are specified for important roadways from coast to coast.

THE
UNION METAL
MANUFACTURING COMPANY
Canton 5, Ohio Brampton, Ontario
Monotube Engineered Lighting Poles

TYPICAL HIGHWAYS USING MONOTUBE POLES:

- Maine Turnpike
- New Hampshire Turnpike
- Massachusetts Turnpike
- New York State Thruway
- Pennsylvania Turnpike
- Atlanta Expressway
- Ohio Turnpike
- Kentucky Turnpike
- Indiana Toll Road
- Illinois Tollway
- Kansas Turnpike
- Texas Turnpike
- Vancouver-Olympia Freeway
- Hollywood Freeway
- Highway 101, Waldo Grade, (Cal.)

(Continued from page 114)

obsolete bracket lights at street intersections and residential sections. We attribute the success of the second bond issue to the fact that Tacoma's citizens were impressed with the lighting results under the 1954 bond issue and so desired to complete the city's lighting.

To date we have relighted 104 miles of arterial streets and have a total of 116 miles of arterial streets lighted to I.E.S. standard. The 104 miles of streets lighted under the bond issues represent installations with a total of more than 4,300 units, each employing a 21,000-lumen mercury lamp. In addition, approximately 605 units, each employing 175-watt, 7,000-lumen mercury units, are installed in our residential areas. The average maintained lighting levels provided by the new lighting for our arterial streets range between 1.0 and 2.5 footcandles and are, for most installations, well above national recommended standards.

With property owners' participation, we are now in the process of replacing the old 65-watt, 1,000-lumen bracket lights with 175-watt, 7,000-lumen mercury-vapor units providing A.S.A.-I.E.S. type II, four-way light distribution for street intersections. On blocks over 600 feet, we add another unit at the mid-block. We are using General Electric luminaires throughout, supported by Hubbard aluminum mast arms.

Accidents Compared

An analysis of Tacoma's traffic-accident records shows a substantial reduction in the number of fatal accidents, especially in the night-time fatal pedestrian category for the five-year period from 1956 to 1960, as compared to the five-year period from 1951-1955. The first new street lights installed were turned on November 10, 1955. Since then with better lighting, fatal night-time pedestrian accidents have been reduced from 43 to 18 annually, a reduction of 58% or an average of five a year.

While the vehicular registration in the Tacoma area increased 35% between 1951 and 1960, from 97,000 to 132,000 vehicles, the total number of accidents, in general, remains approximately the same—4,574:4,565 per year.

It is no wonder that the people of Tacoma are enthusiastic in their praise of the improved lighting conditions. ◄◄

Residential mercuries

Mercury luminaires for the residential areas of our city are proving to be one of the best buys in the city budget. Casper, which calls itself the "Oil Capital of the Rockie has had high-level lighting downtown. But, until recently, the newer residential additions have been "in the dark." However, more than 300 General Electric residential mercury luminaires, installed in our two new Hilltop and Valley Hills areas, have corrected this deficiency. The new 7,000-lumen units provide homeowners with better security against vandals and burglars and have made residential streets safer for women and children after dark. The new luminaires are mounted about 26 feet above the streets on wooden poles, spaced about 300 feet apart. They produce about 0.2 footcandle of light.

In addition, modern 21,000-lumen lighting fixtures are providing better light at various heavy-traffic intersections in other parts of the city to reduce driving hazards.

The Pacific Power & Light Company invested about $80,000 in the new facilities, and maintains the lighting system. It charges the city $4.50 a month for each fixture. The utility has presented a plan to the city council for installing another 375 units subject to the city's approval.

Casper is the second largest city in Wyoming. It is almost centrally located in the state and is near extensive oil fields; it is the home of three major oil refineries. Five uranium ore processing mills are nearby.

Henry Rolfes, Jr.
City Manager
Casper, Wyo.

Suburban streets are much safer in Casper with the new mercuries on the job.

FBI reports crime at all-time high

The FBI's Uniform Crime Reports for 1960 reveals that serious crime last year reached a new all-time high, with a 98% increase over 1950 while the population increase during this decade was only 18%.

The report, based on data submitted by more than 7,700 police agencies, shows that lawlessness continued its upward surge with 1,861,300 serious crimes of murder, forcible rape, robbery, aggravated assault, burglary, larceny of $50 and over, and auto theft reported in 1960, 14% higher than in 1959, or 230,870 more serious crimes than in the prior year.

During 1960 a serious crime was committed every 15 seconds in the United States. A murder, forcible rape or assault to kill occurred every three minutes.

Crimes against property, FBI Director J. Edgar Hoover said, were generally much more frequent. A burglary was perpetrated every 39 seconds, a larceny of $50 and over occurred every minute, a car was stolen every 2 minutes, and every 6 minutes saw a robbery.

When these offenses were examined individually, the FBI report indicates that robberies and burglaries were each up 18% in 1960 over 1959. Larcenies over $50 rose 14%, and auto thefts increased 9%. Murders had a sharp 6% rise, aggravated assaults were up 5% and forcible rapes occurred with 3% greater frequency than in the previous year.

The FBI reported 3,640 arrests for every 100,000 persons in the United States in 1960, with city arrests occurring at almost three times the rural rate. Female arrests rose 10% in rural areas while increasing only 3% in city areas.

Arrests of juveniles have more than doubled since 1950, while the population of youths aged 10 to 17 increased by less than half. There was one reported arrest for every 26 young persons between ages 10 to 17 in 1960. Last year juvenile arrests occurred 9% more frequently in the city and 8% more often in rural areas, than in 1959. In cities, total arrests were up 2% over 1959, with adult arrests registering only a 1% increase while juvenile arrests were involved in 62% of auto theft arrests, 51% of the burglaries, 49% of the larcenies, 28% of the robberies, 20% of the forcible rapes, 12% of the aggravated assaults, and 8% of the arrests for murder.

Arrest statistics indicate that criminality in rural areas, though proportionately less, is very similar to crime experience in cities.

Crime, for the past five years, has been rising over four times faster than the population. Since 1950 the crime rate (number of crimes per 100,000 persons) has increased 66%. In 1960 criminal activity reached a peak in November after a low in March.

The exact cost of crime is incalculable, but direct property losses, based on police reports, average $256 for every robbery; burglary, $183; larceny, $74; and auto theft, $830. Thieves in 1960 stole loot amounting to over $570,000,000. Effective police work resulted in recovery of 52% of this stolen property. Police in 1960 cleared 71% more cases by arrest and 65% more persons were charged than in 1950. Court convictions meanwhile were up 42%.

Director Hoover pointed out that law enforcement agencies handled 15,000,000 violations of traffic and motor vehicle laws, and city police alone issued 31,000,000 parking citations in 1960.

Last year 48 police officers lost their lives in the line of duty, 28 at the hands of killers. Six of these officers were slain by vicious killers then benefiting from leniency granted after conviction for crimes of murder, robbery, aggravated assault, burglary and forgery. Virtually every police murderer had been previously arrested from one to 39 times on a wide range of reprehensible and malicious charges. In addition, more than 9,600 city police were assaulted while performing their duties.

Noting that the number of police employees remained virtually the same in 1960 as in 1959 while crime continued on the increase, Mr. Hoover urges every community to extend its complete support to "provide sufficient manpower, adequate salaries, professional training, and men who have the respect of the community and pride in their department." ◄◄

1961 Annual Index

Bound into the back section of this issue of "The American City" is the 1961 Annual Index, arranged according to subject and place.

INVEX OZONE GENERATORS

For prompt action, write directly to our representative for a FREE demonstration—No obligation!

INVEX REPRESENTATIVES

EASTERN

Eastern N.Y., Northern N.J., New England
Burde-Perron Associates
E. 42 Farview Terrace, P.O. Box 247
Paramus, New Jersey
HU 9-2400

Central N.Y. State
Siewert Equipment Co., Inc.
175 Akron Street, Rochester 9, New York
HU 2-9640

Eastern Pa., Southern N.J.
Delaware, Maryland, Northern Virginia
District of Columbia
Walter Taft & Associates
17 S. Chester Road, P.O. Box 179
Swarthmore, Pennsylvania
KI 4-1960

North & South Carolina, Georgia, Alabama
W. D. Taulman & Associates
415 East Paces Ferry Road, Atlanta, Georgia
CE 7-0311—2—3

CENTRAL

Indiana, Western Ohio
Barnes Plant Equipment Co.
3513 Hovey Street, Indianapolis, Indiana
Off. Ph. WA 3-4240; Res. Ph. LI 6-4610

Minnesota, Northwestern Wisconsin
Bud Skoglund & Associates
607 Sexton Blvd.
Minneapolis 15, Minnesota
FE 8-2690

Iowa, Northwestern Illinois,
Kansas, Western Missouri
Zimmer & Francescon
1715 Fifteenth Street Place, Moline, Illinois
764-3576
and 220 Jewel Bldg., 1103 East Armour
Kansas City, Missouri

MID-WESTERN

Colorado, Arizona
Ray Case & Associates
601 Colorado Blvd., Denver, Colorado

Southern Texas, Western Louisiana
A. J. Crum
4911 Elm Street, Bellaire, Texas
MO 5-6595

WESTERN

Southern California
Engineers Sales-Service Co., Inc.
4935 Telegraph Road
Los Angeles 22, California
AN 1-2181

Oregon, Western Washington
Ed Lokay & Company
10338 N.E. Sandy Blvd., Portland 20, Oregon
Off. Ph. AL 4-7378; Alt. Ph. AT 1-7807

Idaho, Montana, Eastern Washington
Bill E. McKee
P.O. Box 2141, Spokane, Washington

MEXICO AND EXPORT

Mexico
Afsa S.A.
Av. Oaxaca 13, Mexico 7, D.S.

Export
Resources and Facilities Corporation
100 East 42nd Street, New York 17, N.Y.
MU 7-4741

Research and Development Since 1930

INVEX
INC.
Box 1335 • 1100 N.E. 125th Street
North Miami, Florida
A DIVISION OF CONTINENTAL DIVERSIFIED INDUSTRIES, INC.

INVEX OZONE GENERATORS = The Solution To Your Problems + Economy and Efficiency

9 TYPES — 22 MODELS — FOR EVERY APPLICATION

PROBLEM: Plagued with Sewage Pumping Station Neighborhood ODOR complaints?

SOLUTION: Use Model FA-160 (Illustrated) installed over wet well. Destroys odors caused by Hydrogen Sulfide and Mercaptans, mitigates concrete corrosion and adds dissolved oxygen to sewage flow keeping it fresher and easier to treat at the plant. Cost of operation ½c per hour.

PROBLEM: Manhole odors at underground lift stations?

SOLUTION: Use Model US-130 installed in or above the packaged lift station. Destroys odors caused by Hydrogen Sulfide and Mercaptans, mitigates concrete corrosion and adds dissolved oxygen to sewage flow. Cost of operation ½c per hour.

PROBLEM: Having Treatment Plant influent channel odors?

SOLUTION: Use Model RC-260 installed at channel structure. Ozone is diffused to the liquid thereby destroying odors and increasing oxygen.

PROBLEM: Odorous influent at primary tank? High bulking of solids? Lack of Oxygen in waste water discharged to streams?

SOLUTION: Use Type EA-360 Series installed at primary or preaeration chamber for the ozonolysis of solids, destruction of odors, and cost reduction of air volumes. Increases dissolved oxygen in effluents to maintain critical oxygen balance in our many polluted rivers and streams at extremely low cost.

PROBLEM: Taste, Color and Odor potable water problems in distribution systems with no water treatment plant facilities?

SOLUTION: Use Type AJ-390 Series installed between pump and distribution system for prompt alleviation of Taste, Color, Odor water problems and reduction of water-borne pathogens. Operating costs as little as $1.00 per day. Low initial cost.

PROBLEM: High chemical costs for water Taste, Color and Odor reduction in your water treatment plant?

SOLUTION: Use Type IT Series installed at degasifiers and Type HS series for in-plant use for reduction of organics, iron, manganese-caused Colors, etc., vegetable, earthy, musty and phenolic Odors and Tastes at a significant cost reduction while still maintaining chlorine residuals.

PROBLEM: Got Swimming Pool Problems?

SOLUTION: Use Type SP series installed between pump discharge and pool to destroy harmful bacteria, most algae and bacteria-breeding slimes. Reduces eye, skin and ear complaints. Reduces chemical costs. Improves Color, Odor and Taste, making the pool heathfully inviting.

PROBLEM: How to get these needed facilities NOW with limited funds?

SOLUTION: INVEX, INC. provides a low cost monthly payment lease purchase plan at 6% interest.

MR. O'THREE SAYS "HERE'S POSITIVE PROOF"

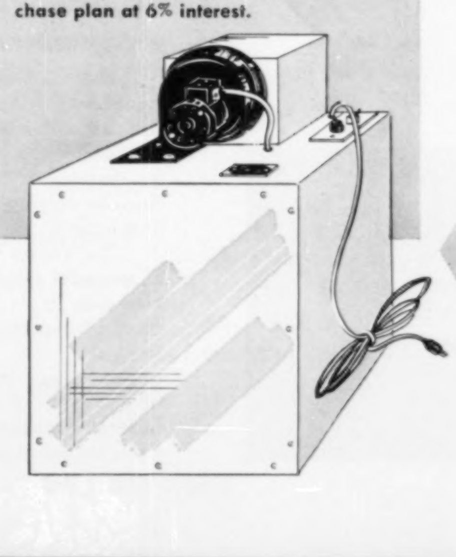
Read these unsolicited statements:

"The service on our generators, from your personnel, has been prompt, efficient and courteous. The Invex Ozone Generators have met our high standards for efficiency of odor control."... (13 generators in use in Clearwater) From: D. J. Raye, Superintendent, Sewage Treatment Plants, Clearwater, Florida.

"This first machine (Invex) proved so satisfactory and impressed the writer to such a degree that we now have, here in the State of Florida, many of these machines being used for odor control in lift stations and at sewage treatment plants at such points as sludge draw-offs, inspection wells, inlet to the plant, trickling filters, etc. These machines have been improved to the point where they operate very efficiently and do an effective job for odor control."... From: Ralph H. Baker, Jr., Sanitary Engineer, Florida State Board of Health, to Mr. D. S. Abell, Butler County Health Dept., Penna.

"The job these six units have done for the City of Bradenton has been wonderful. The units have paid for themselves... With such odor controls, our publicity and public relations have been excellent... As you know, a dollar sign cannot be placed on good public relations and publicity."...(re: Invex Ozone Generators) From: Perry A. Cessna, Sewage Superintendent, Bradenton, Florida.

"We reduced raw water color from 70-90 PPM range to 30-35 PPM range by Ozone being introduced into our degasifier via the fan suction, and with this color reduction we were able to reduce chlorine demand from 160 lbs/MG to 90 lbs/MG, and produce a final color of 5 to 10 PP. From: Mr. W. A. Oeffler, Plant Manager, Water Board, North Miami Beach, Florida to Mr. L. S. Finch, Vice President and Chief Engineer, Indianapolis Water Co., Indianapolis, Ind.



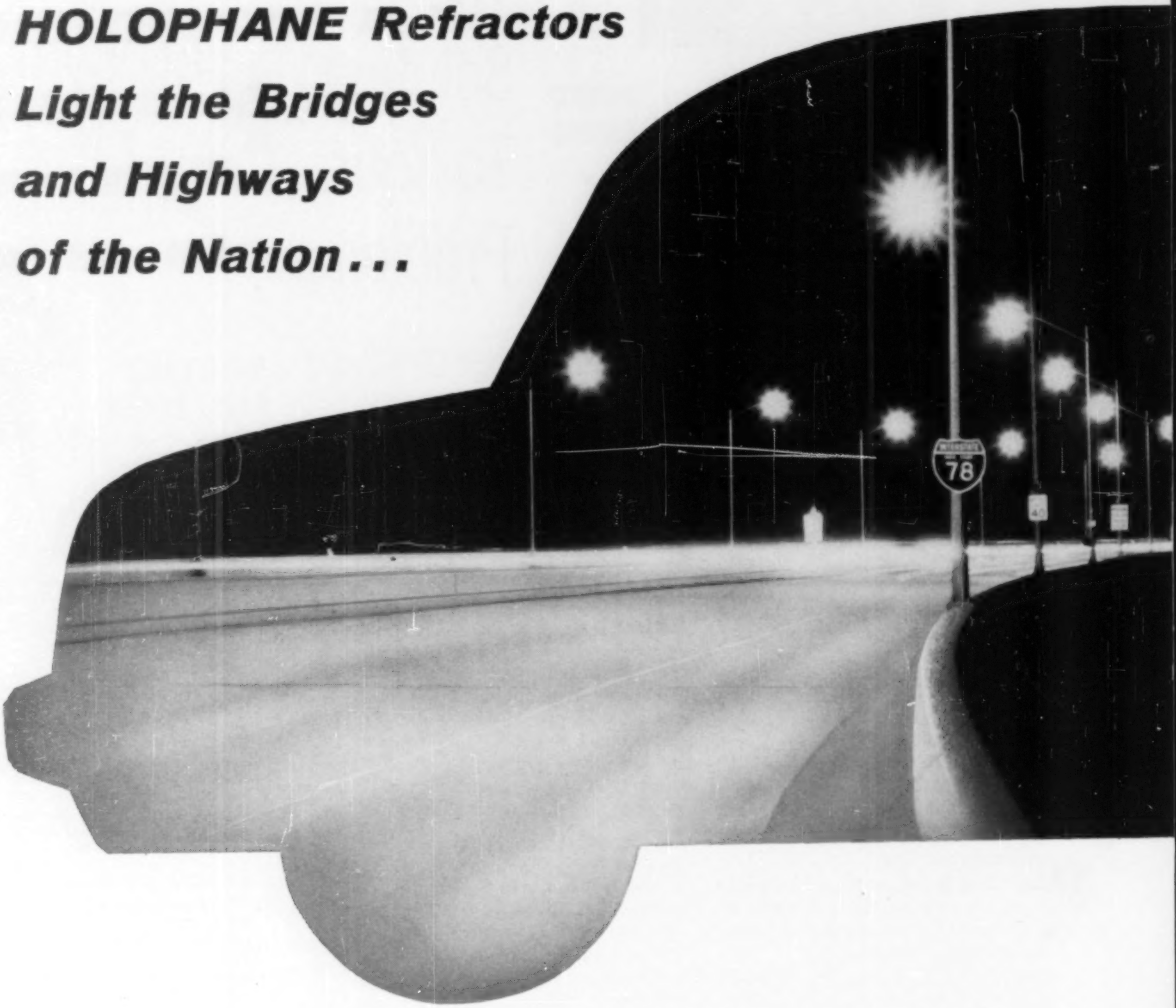
Specified by more leading Consulting Engineers than all other generators combined

Research and Development Since 1930

INVEX
INC.
Box 1335 • 1100 N.E. 125th Street
North Miami, Florida

A DIVISION OF
CONTINENTAL
DIVERSIFIED
INDUSTRIES, INC.

HOLOPHANE Refractors Light the Bridges and Highways of the Nation . . .

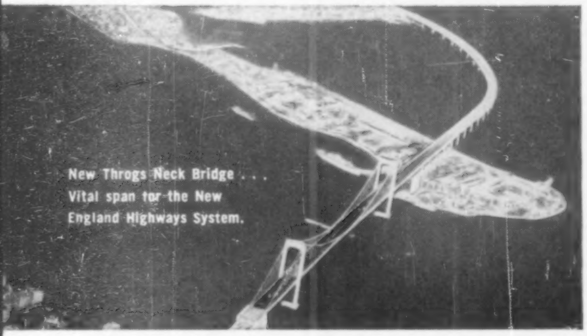


Count on Holophane . . . Wherever Better Lighting Counts

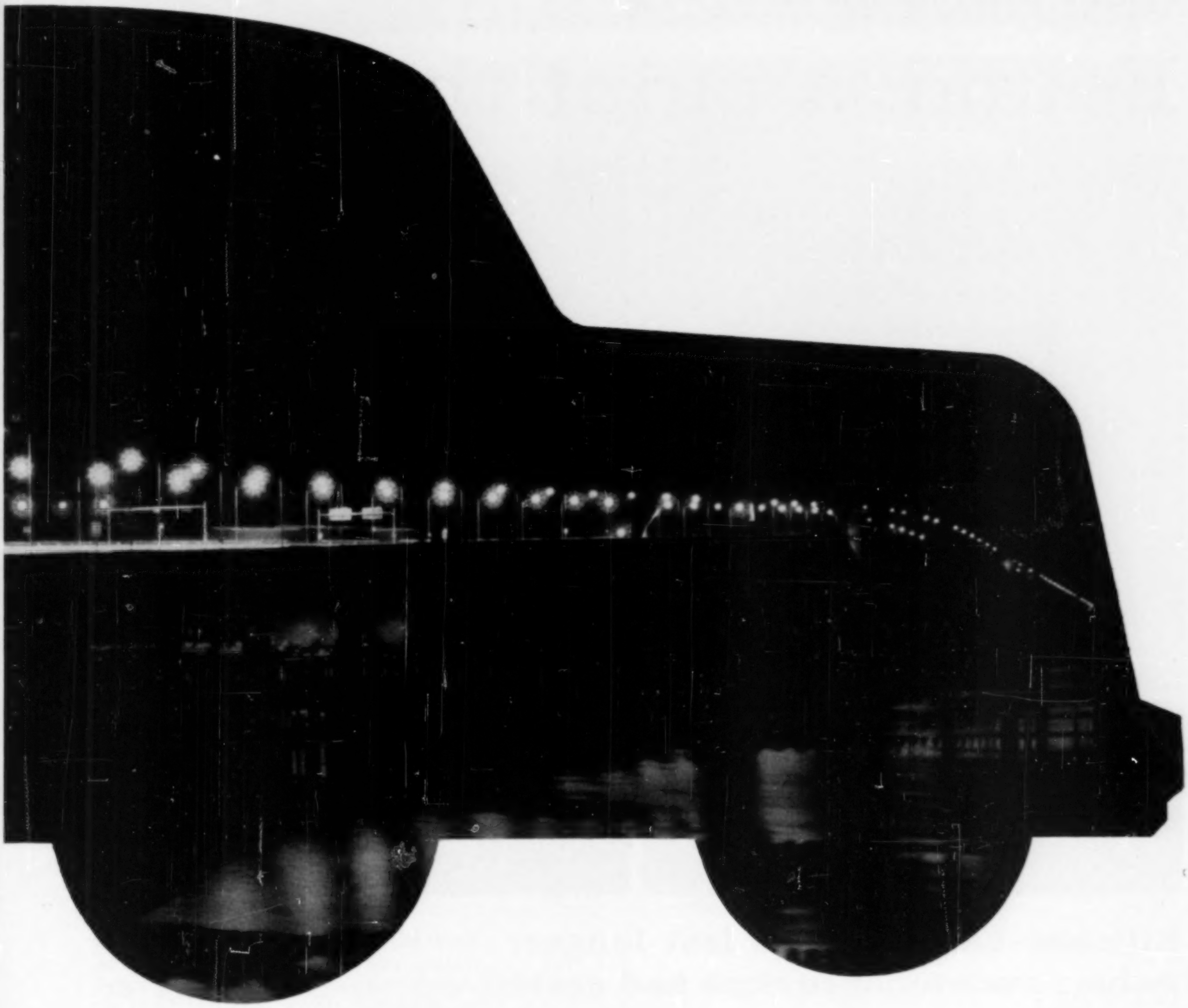
Time after time, lighting plans for new expressways, interchanges and bridges carry this specification: "Luminaires to be equipped with Holophane Refractors." The repetition is no mere coincidence. Through 60 years—among people who know lighting quality—Holophane has maintained an unchallenged reputation for helping to provide the most efficient, economical street illumination.

The Throgs Neck Bridge is another link in the long line of successful installations in which Holophane equipment has been used. Its six-lane roadway enjoys "daylight visibility" produced by Holophane Refractors with 400 watt Mercury Vapor lamps.

Investigate how Holophane Refractors can improve traffic, advance safety, on thoroughfares in your community. Holophane engineers—with long experience and thorough knowledge—will gladly aid you in planning any street lighting project.



New Throgs Neck Bridge . . . Vital span for the New England Highways System.



Check These Advantages of Holophane Prismatic Refractors:

(Available through Leading Luminaire Manufacturers)

HIGH UTILIZATION EFFICIENCY
Prismatic control puts more light on critical areas.

CONTROLLED DISTRIBUTION
Spreads light uniformly along roadway.

LESS GLARE PER FOOTCANDLE
Precise prisms direct light away from glare zones.

GREATER ECONOMY
Less units needed . . . Higher footcandles for the dollar . . .
Low-cost maintenance.

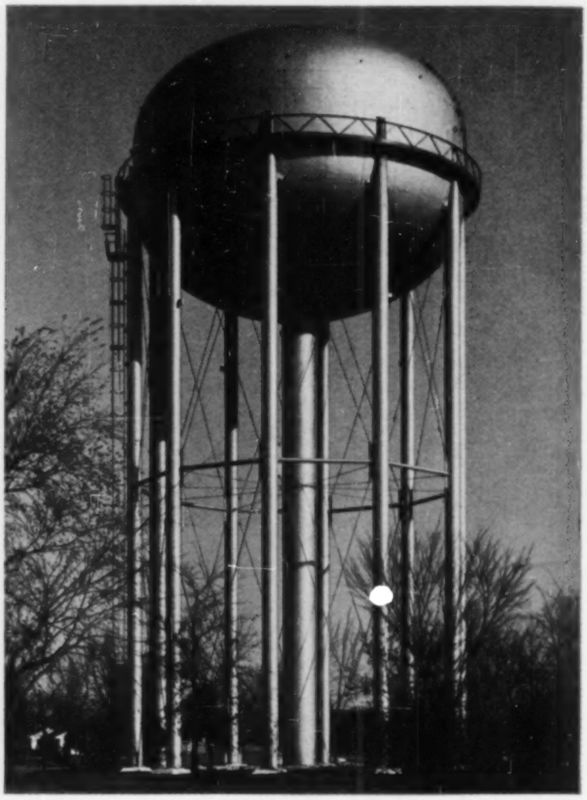
Write for 24 Page Book on Street Lighting with Holophane Refractors

HOLOPHANE COMPANY, INC.
Lighting Authorities Since 1898
STREET LIGHTING DEPT., NEWARK, OHIO
THE HOLOPHANE CO., LTD., 418 KIPLING AVE. SO., TORONTO 18, ONT.

Holophane Refractor No. 4027
Westinghouse Luminaire OV-25 Type III

SILICONE NEWS from Dow Corning

Found: a paint that lasts



Silicone-based paints last longer; reduce maintenance time and costs

These two pictures emphasize the stubborn fight that maintenance coatings based on Dow Corning silicone resins put up against severe weathering conditions. Located in a northern industrial city, this water tower is constantly exposed to an army of paint killers — summer sun, winter sleet, smoke, rain, *plus* a corrosive chemical laden atmosphere.

At left, the tower is shown two years after it was painted with a conventional organic coating that withstood severe weathering during this period. Rust and corrosion marred its appearance and promised even greater damage. Using organic paints it was necessary to paint the tower at least every two years, a costly, almost continuous job.

Now, see how a silicone-based paint has cut this maintenance process in half. At the right, the tower is coated with an aluminum pigmented silicone-alkyd. But this paint job was done two years ago! The tower is still gleaming bright and completely protected. And maintenance men predict it will stay that way for several years more. The savings in time and money are obvious.

Beat high heat! Such a silicone-based coating can also be readily applied to surfaces that run hot, such as encountered on industrial stacks, mufflers, furnaces. Blistering, peeling, rust and corrosion are prevented; need for costly repainting and — in many cases — expensive replacement is greatly reduced.

Lasting colors, too. Silicone-based paints are now available in many colors . . . colors that stay put and don't fade. This means you can carry your color-coding on hot equipment for greater safety and efficiency while improving the overall beauty of your plant.

When you can have coatings like this — that last from 25% to 50% longer; that make plants and equipment look better, longer — don't you think you should find out more about them soon?

Send for your copy of "Why Silicone-Based Paints Mean Less Maintenance". Write Dow Corning Corporation, Department 0724, Midland, Mich.

first in silicones

Dow Corning

Light for the jug-handles

"Jug-handle" intersection on U. S. 1 at Port Mercer, N. J.

Key intersections along a 36-mile strip of New Jersey's truck-clogged U. S. 1 have been equipped with General Electric fluorescent luminaires. This is said to be the nation's longest synchronized traffic-control network. It runs from Woodbridge to Trenton and features 30 "jug-handle" intersections lighted by two-lamp and four-lamp six-foot luminaires. It handles more than 15,000 vehicles daily.

Jug-handle intersections were designed as one of the steps between uncontrolled intersections and overpasses. Visualize the jug as the highway: a motorist who wishes to make a left turn simply turns right at the base of the handle, travels to the top, turns left along the top of the handle and crosses the "jug' at a traffic-signal-controlled intersection.

The level of illumination is one-half a footcandle, or 25 times the brightness of a full moon. The luminaires are mounted on Pfaff & Kendall aluminum poles 25 feet above the roadway. There are five such installations to each intersection. ◄◄

A realistic price for street lighting

In recent years electric utilities have made considerable progress in modernizing their rate structures by reducing the number of schedules and simplifying the rates themselves. Yet there remains a great deal more to be done in this direction—particularly in the area of street-lighting rates.

The usual street-lighting rate has three components—the charge for electricity, the charge for ownership of facilities, and the charge for operation and maintenance of the street-lighting system. The normal function of an electric utility is to supply electric service to the premises of the customer, and in most cases there is no company-owned equipment beyond the meter. The ownership of facilities to supply lighting and maintenance of equipment is somewhat unique in the conventional scope of utility operation and perhaps should not be associated with the charge for electric service.

It would seem logical and more realistic to separate these three components in order to make the pricing of the service more indicative of the costs incurred.

The charge for electricity should represent, as far as practical, the pricing under the utility's general-service rate and made applicable to the total kilowatt-hour usage of the customer estimated in the usual manner, according to lamp wattage ratings and standard burning schedule.

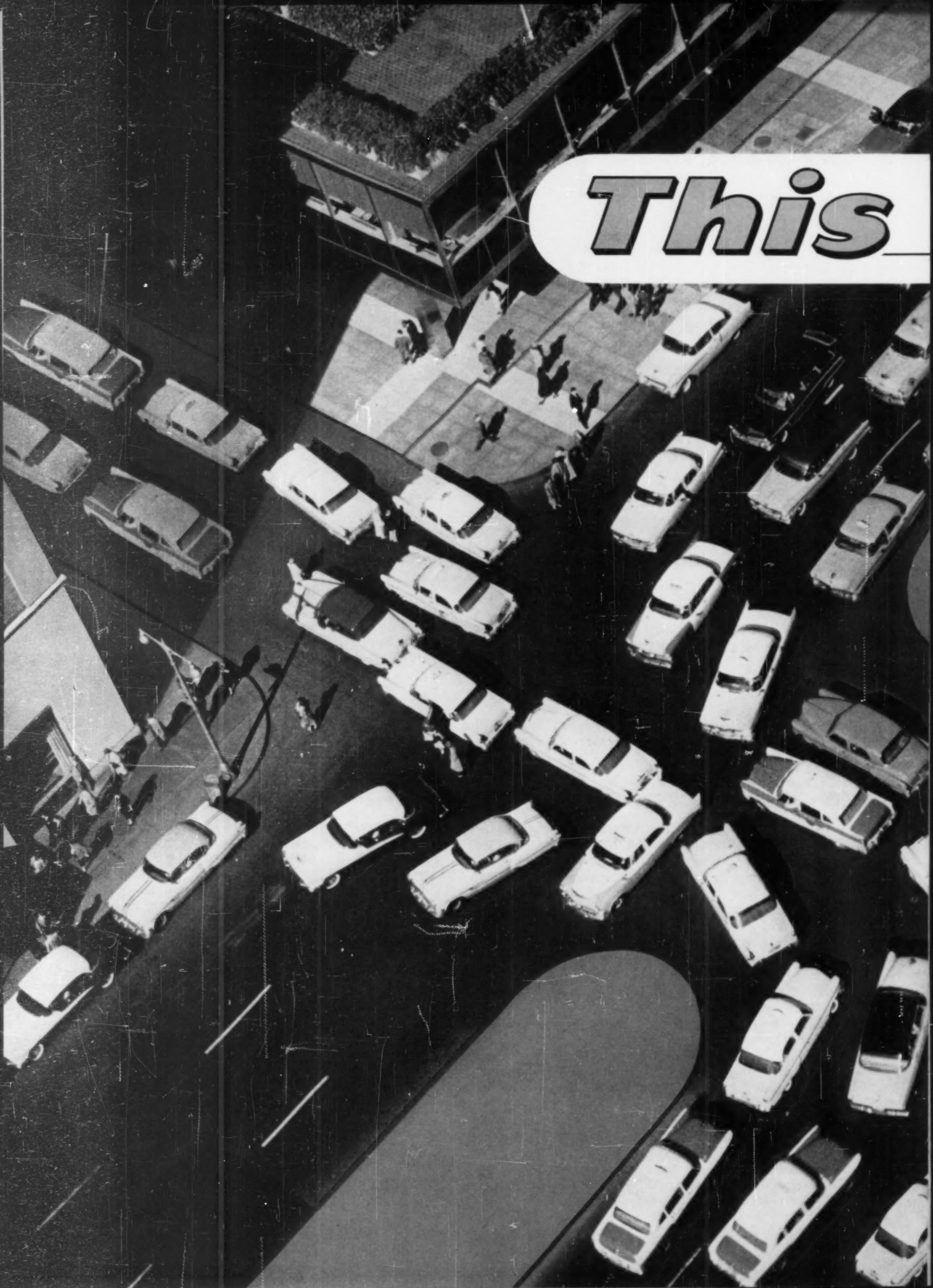
The charge for company ownership of equipment should be in accordance with the accepted utility fixed charges; those which would be applicable to any other equipment used in furnishing electric service. Many companies have charges of this kind for the use of distribution transformers owned by the company which, under the provisions of the rate schedule, are normally owned and maintained by the customer.

The charge for operation and maintenance of the street-lighting system should reflect the out-of-pocket expenditures for lamp replacement, cleaning and replacement of glassware, painting of posts, and appropriate overheads.

Under this form of pricing, the customer, a municipality, town or local agency, is made aware of the form of service supplied, what it is paying for and the value

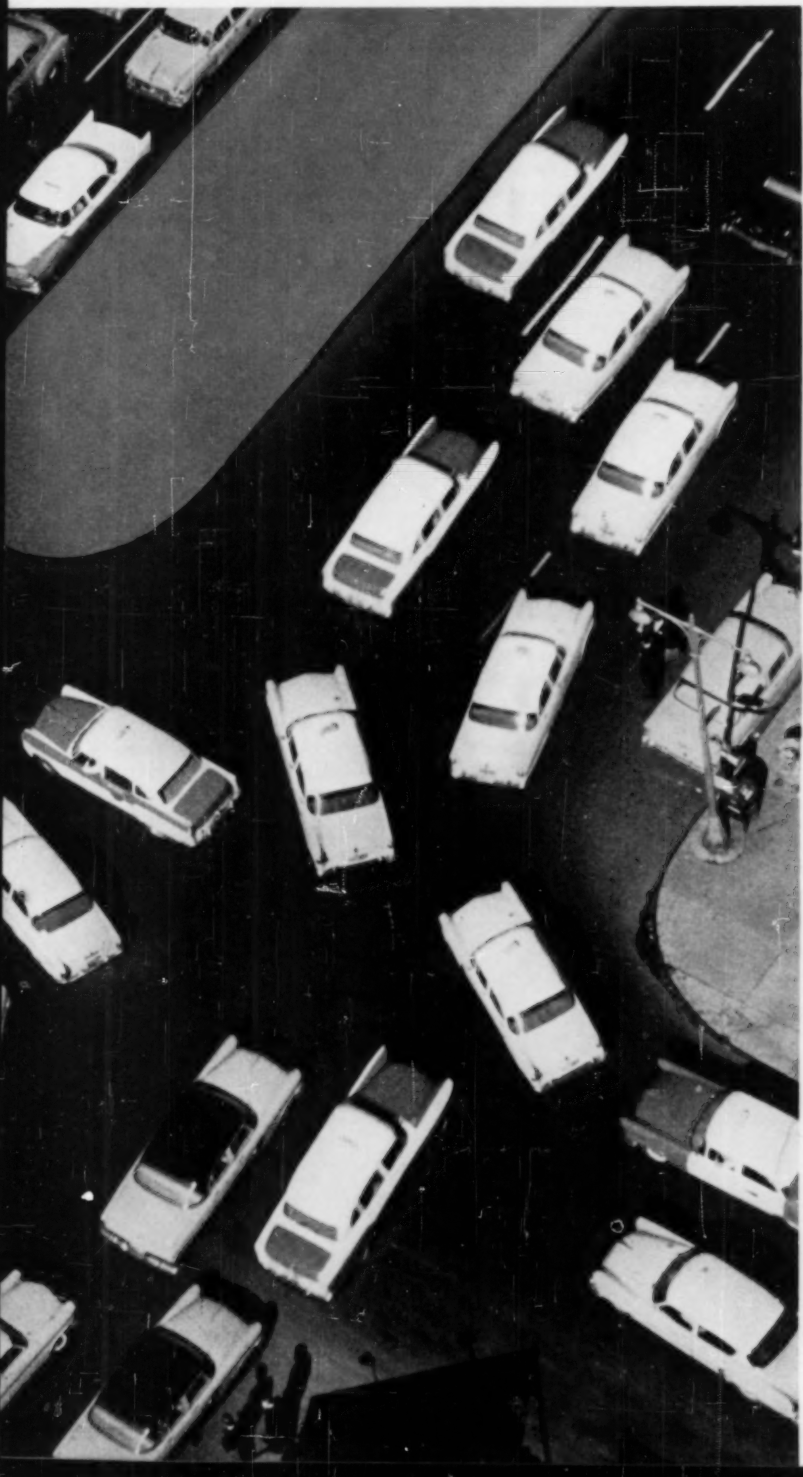
(Continued on page 126)

This article is adapted from a paper presented by Mr. Sharkey before the Electrical World Street & Highway Lighting Conference in Chicago.


This

never happens with . . . *The New 5-Phase Multiple Lane Dual Left Turn*

TRAFFIC CONTROLLER



Few flow problems are more disturbing to traffic engineers—or motorists trapped in rush-hour—than to see right-of-way time wasted.

With the new LTD-510 in control, right-of-way is apportioned to those phases needing it—when they need it, for as long as they need it—in the absence of demand from other phases.

In operation, right-of-way is transferred from any phase directly to any other phase according to actual traffic demand—automatically skipping any and all phases on which there are no calls. Left-turn and straight-through movements can start simultaneously, overlap, or follow each other, depending on demand.

Exclusive with

CROUSE-HINDS

LTD-510 provides efficiency and flexibility well beyond anything else on the market for the exclusive left-turn slot application. It is the uncomplicated solution to a complicated traffic-flow problem.

Write, wire or phone now for complete specs and functional information.

CROUSE HINDS

REG. U. S. PAT. OFF.

MAIN OFFICE: SYRACUSE, N.Y. **FIELD OFFICES:** Albany, Atlanta, Baton Rouge, Birmingham, Boston, Buffalo, Charlotte, Chicago, Cincinnati, Cleveland, Corpus Christi, Dallas, Denver, Detroit, Houston, Indianapolis, Kansas City, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Oregon, St. Louis, St. Paul, Salt Lake City, San Francisco, Seattle, Tampa, Tulsa, Washington.
RESIDENT REPRESENTATIVES: Baltimore, Md., Meriden, Conn., Reading, Pa., Richmond, Va., Springfield, Mass.
FOREIGN AFFILIATES: Crouse-Hinds Company of Canada, Ltd., Scarborough, Ont., Crouse-Hinds-Domex, S.A. de C.V. Mexico, D.F.
MANUFACTURING LICENSEE: Peterco, Sao Paulo, Brazil.

(Continued from page 123)

of this service to the community. It will also permit company management to keep track of the cost of furnishing street-lighting service on a continuing basis. Separating the charge for electricity has one other good feature. From experience, we know that city managers who were not familiar with utility pricing are prone to divide the total bill for service by the kilowatt hours delivered to derive cents per kilowatt hour. Of course, this figure will be considerably higher than that of other types of service which do not include ownership and maintenance of equipment. This leaves the impression that street lighting is very high priced.

The charge for *electricity* for billing purposes may be one figure derived by multiplying the total estimated monthly kwh usage of the customer by the established rate. Since burning time and total kw demand of the service are readily calculated, this would be a flat rate per kilowatt hour.

The monthly charge for *ownership* may be a single item also—the percent monthly fixed charge times the reported amount of investment in company-owned equipment.

The monthly charge for *operation and maintenance* of the street-lighting system should reflect, as far as possible, the actual expenditures made. Obviously, a time lag of two to three months is necessary for the purposes of billing.

The level of street-lighting revenues, together with the amount flowing to return is, of course, a matter of management policy. Many utility executives appear willing to furnish street lighting on the basis of recovering only out-of-pocket expenses. It may be considered that this is a matter of public service to the community and the other utility customers pay for street lighting one way or another. We do not question this thesis but we do believe management should be constantly aware of the magnitude of any subsidy which may be provided. Management should also make sure that the full benefits of the public-relation aspects are being achieved.

In recent years street-lighting fixtures, control components and other equipment have undergone extensive redesign and refinement. These changes have resulted in a greater appreciation both on the part of the public and municipal authorities of the value of adequate lighting and the favorable influence it can play in crime reduction, pedestrian and automobile accident-frequency rates and community development and improvement programs. Several electric companies which recognize a greater responsibility to maintain adequate and reliable service are developing long-range plans for improvements and expansion. Undoubtedly, more expansion and rehabilitation of existing systems can be anticipated.

Even at existing rates of charge, street lighting, in the next two decades, will be a billion-dollar business. Now is the time for utilities to evaluate the sizable impact of anticipated highway lighting load. If the pricing structure is put on a modern, realistic basis, it will be possible to negotiate contracts which will provide a return worthy of full promotion of the service.

T. L. SHARKEY
Manager, Rates and Pricing Services
Management Consulting Division
Ebasco Services, Inc.
New York, N. Y.

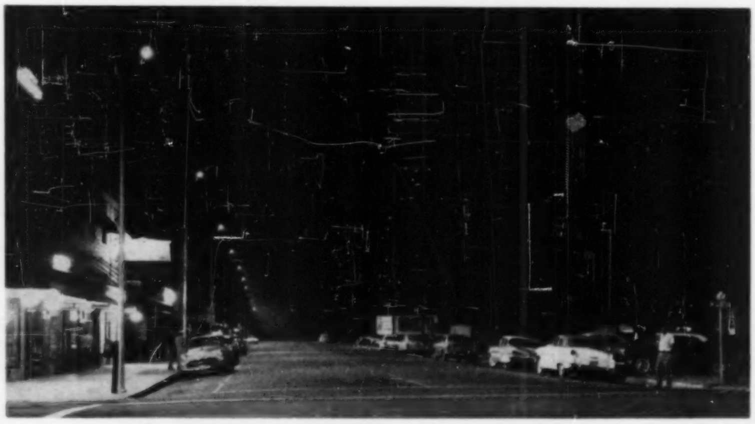
Sanger "enlarges" parking lot with lights

Poor lighting used to drive motorists and potential shoppers away from a two-block business strip in Sanger, Calif. However, the city corrected the difficulty by installing 12 250-watt Wide-Lite Juniors, using color-corrected mercury-vapor lamps, spaced 78 feet apart along the two-block strip.

The city arranged to place the lights on the side of the street where the business houses are located. The directional lighting provides illumination on the street for light traffic, and enough "spill" light and silhouette lighting on the parking area to insure safety, without beaming light into the windows of the two-story buildings on the business side of the street.

The Wide-Lite Juniors were mounted on 30-foot octaflute poles with modified bracket arms. A multiple-system 120/240 volts is included and each pole has a convenient outlet for Christmas decorations.

JAMES EMANUEL
City Manager
Sanger, Calif.



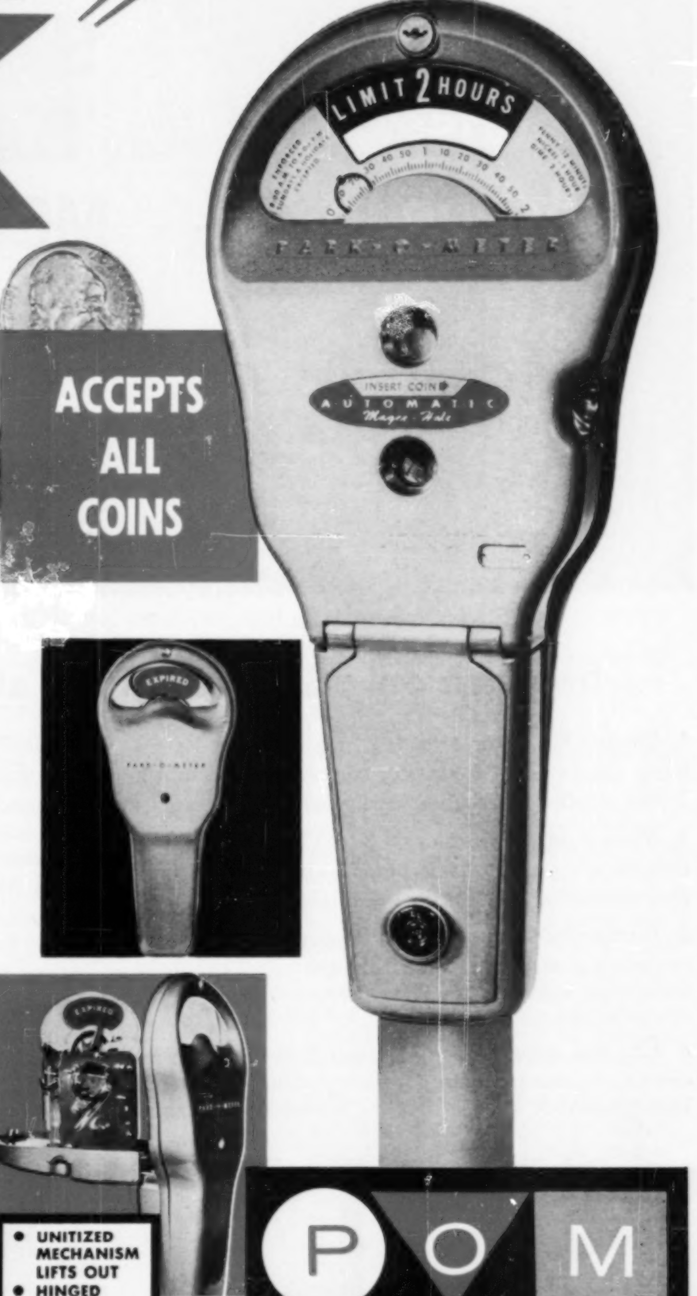
Directional lighting transforms a previously dark area into a large, safe, customer parking space.

NEW FROM PARK-O-METER

AUTOMATIC

MODEL

K



ACCEPTS ALL COINS

New Park-O-Meter Model "K" offers many improvements over previous models.

Exclusive P-O-M coin handling action is even further refined. Now, all four coin sizes and courtesy tokens operate with equal efficiency.

Model "K"—like other quality Park-O-Meters—has hinged work table door for convenience of servicing.

Replace outmoded equipment now. The numerous important improvements in P-O-M Model "K" will increase the profitability of your parking meter system. Write now for more information and complete specifications.

- **UNITIZED MECHANISM LIFTS OUT**
- **HINGED FRONT PROVIDES WORK TABLE**

P O M

MAGEE-HALE PARK-O-METER COMPANY
FACTORY & OFFICES: 3909 WILLOW SPRINGS RD.
OKLAHOMA CITY, OKLAHOMA • P.O. BOX 7298 • PHONE WIndsor 6-1491

Any Value Analysis inevitably hands the job to . . . . .
NEW SYLVANIA 'BANNER' MERCURY LAMPS

because only Sylvania offers all these advantages:

1. Longer life—now extended from 9,000 to 12,000 hours (that's about 3 years of continuous service in a 2-shift plant!), thanks to new trimetallic electrodes.

2. More light—approximately 2 to 3 times the light of incandescents on the same power! You get more light output initially, higher maintained light, too.

3. Ruggedized construction. Banner lamps stand up to fiercest punishment. From hard glass shell to solidly welded, multiple-supported innards, they shake off shock, vibration, weather.

4. Life Recording Base—unusual feature saves precious time, annoying paper work by letting you scratch installation date in code right on the base of the lamp.

5. Certified Performance Policy—guarantees that: "Banner Mercury Lamps may be returned to the supplier for full exchange if they fail in less than 1000 burning hours, and thereafter (up to 5000 hours) for pro-rata exchange, in accordance with a pro-rata exchange value table set forth clearly in the policy form."

Certified Performance Policy for BANNER MERCURY LAMPS
SYLVANIA

PLUS Lowest TCL (Total Cost of Lighting), which means cost of lamps plus power plus maintenance. Sylvania assures you of lower costs all the way!

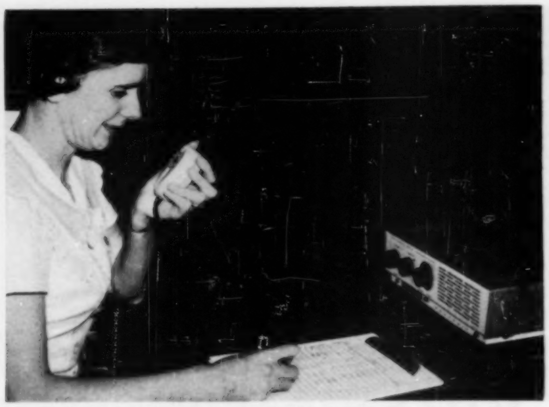
Lighting Division, Sylvania Electric Products Inc., Dept. 63, 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., Montreal.

SYLVANIA

SUBSIDIARY OF
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

The author keeps in contact with City Hall and other municipal service operations with his mobile two-way Citizens' Band Radio.



City Hall Clerk Thelma Rankins receives an incoming call and dispatches the requested vehicles.

Try a Citizens' Band Radio System

. . . to provide low-cost two-way radio communication for services other than fire and police in the small city

By **F. FREEMAN FUNK**
City Manager
Fredericksburg, Va.

Small cities such as ours need the ability to dispatch snow plows and other public-works vehicles promptly, to contact administrative personnel easily, and to summon garbage-collection crews quickly in response to complaints. This by no means is of concern only to the major cities of our nation. Fredericksburg, Va. (population 13,639; area six square miles), knew that a radio network would provide this need but, until recently, we felt that the cost of such a communications system was prohibitive.

Now, however, a complete five-set network of short-range transceivers costs about the same as one long-range radio set. Of course, there is a difference in the radios, too. But, for small cities with limited budgets and a need for short-range two-way radio, the Class D Citizens' Radio Service (or "Citizens' Band") is probably the only practical answer. Any small city can start such a system easily.

First, obtain a Form 505 from the Federal Communications Commission, Washington 25, D. C. Fill it out (it requires five minutes) and be sure to ask for authorization for the total number of sets which you will ultimately require. Mail it back to the F.C.C. Purchase two radios—one for your office (110-volt A.C. set) and one for your car (12-volt D.C. probably). The installation is simple: at the office install an antenna not over 20 feet tall, plug it into the set and connect the power cord to an electric receptacle. In your car, mount the set with a couple of screws or bolts, connect to the power, and connect to a bumper-clamped whip antenna. When your license arrives from the F.C.C. you are ready to operate. A few weeks of trial will enable you to evaluate the sets and to decide how many more sets to purchase and install.

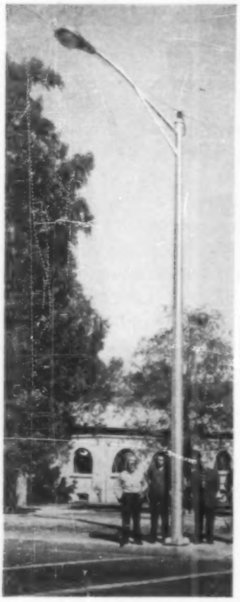
You can expect to have other people using the same channel which you are using, for Citizens' Band radio is similar to a party-line telephone. However, transmissions are usually short and you can easily wait your turn. You have 23 sep-

Colonial Fredericksburg's City Hall, built in 1814, goes modern with an antenna for a Citizens' Band Radio.

(Continued on page 130)

WHAT A DIFFERENCE!

What a beautiful difference P & K ALL-ALUMINUM LIGHTING STANDARDS can make in any community



You're looking down Broadway, the main business street of Needles, California. Ordered by the City Council as part of a relighting program, the installation, made by the California-Pacific Utilities Co., consisted of twenty seven P & K 30 foot tapered aluminum lighting standards. As you can see from the photos above, the difference is immediately apparent. The result is greater safety for the community at night and the beautiful modern appearance of the new standards by day. Of course, no painting ever required. Why not write for P & K's new brochure ALS-5 for a wealth of helpful information in your street lighting plans.

P&K

PFAFF & KENDALL
84 Foundry Street, Newark 5, N. J.

Branch Sales Office: San Jose, California
In Canada: Powerlite Devices LTD.,
Toronto, Montreal, Vancouver
Export Representative: Philips Export Co., N. Y., N. Y.

(Continued from page 129)

arate channels available under your license and you can switch to another channel if you have purchased additional transmitting crystals. You can also expect to have some difficulty with intelligibility of messages if you exceed these distances: car to base, six miles; base to base, eight miles; car to car, four miles. Remember that your sets are limited to a maximum output of five watts; contrast this with about 40 watts on your police-car sets and 250 watts on your police-station base set.

The cost of sets varies considerably from one brand to another. If you really want to keep costs down you can purchase radio kits. The author purchased three such kits to start with and put them together himself. No radio knowledge is required but one does need a steady hand and ample patience. The word "kit" is another name for a box of parts. If you decide to try the assembly yourself, do not despair when you see a conglomeration of small parts. All will be there and the assembly instructions have been prepared in an excellent manner. We bought our kits from the Heath Co., Benton Harbor, Mich. We paid $62.95 for the superheterodyne model and $19.95 for an antenna. The cost is the same for the DC and AC models and their antennae. This same set already assembled costs $99.95. Still less expensive super-regenerative detector circuit sets are available for $42.95 (kit) or $60.95 (factory assembled).

We found that the sets work best if they are given a final tuning with test-bench equipment. A local radio service shop tuned a set and installed it in an automobile for $7.50. If you have been adding figures as you read, you have found that a kit, antenna, tuning, and installation cost a total of $90.40. There is no fee for the license from the F.C.C.

Our experience so far has been good. We installed no special generators or alternators but developed no battery trouble. Radio reception has been loud and clear. The time saved has been invaluable.

Here in Fredericksburg, kits were also assembled by the city engineer and the administrative assistant to the city manager for their cars. Five kit sets have been in use for several weeks—one in City Hall, one in the city manager's car, and another in the superintendent of public works' pick-up truck. Additional factory-wired sets are being installed in dump trucks (snow plows in the winter) and garbage trucks, and another base set at the city shop. ◄◄

This is
My Line...
Joe Prismo
Traffic
Marking
Materials &
Equipment

from Prismo

Something New for '62

Joe Prismo's New Pocket Sized Catalog of Traffic Marking Materials and Equipment

52 fact-filled pages accurately identify and quickly describe products and processes, including many new materials and machines for 1962. At desk, drawing board, laboratory or in the field . . . this handy Prismo Primer is our answer to hundreds of requests for a compact, portable highway marking and reflectorization guide. Send for it today!

PRISMO
SAFETY CORPORATION
Huntingdon, Pennsylvania

Dear Joe:

Please send me your handy dandy Pocket Catalog--JP-1.

NAME____________________

ADDRESS____________________

CITY____________________

____

New style, new savings, new safety for your fleet in Rambler for 1962!

102 WAYS NEW AND BETTER! Scores of improvements for reduced fleet operating costs and maintenance! Plus low initial cost in a wide range of compact models—American, Classic 6, Ambassador V-8. Features like this are standard on all or most 1962 Ramblers: Double-Safety Brake System, with tandem master cylinders—one for front brakes, one for rear; 33,000-mile chassis lube; 4,000-mile engine-oil change; greater road clearance; Road Command Suspension for smoother ride; acoustical (and insulating) ceiling of molded fiber-glass. And all have no-rust-out Ceramic-Armored muffler and tailpipe, and famous Deep-Dip rustproofing up to the roof! See your Rambler dealer for an on-the-job test, or contact: Fleet Sales Department A-12, American Motors Corporation, 14250 Plymouth Road, Detroit 32, Michigan.

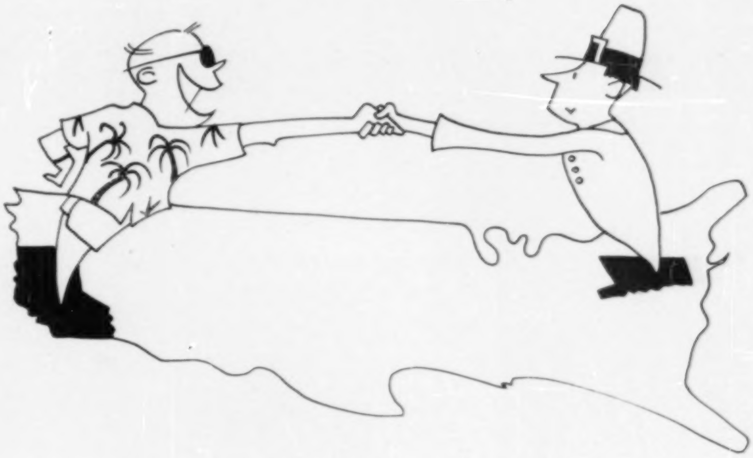
SAVE ON FLEET LEASING! Ask your leasing company for low Rambler rates, or write us for the names of available leasing companies located in your area.

Rambler

World Standard of Compact Car Excellence!

New Type of Wage-Salary Plan

By **CARLETON F. SHARPE** and **HENRY L. GOERLICK***



East-coast Hartford, Conn., and west-coast Lakewood, Calif., have adopted new, substantially identical municipal wage and salary plans. These plans are expected to attract, motivate, and retain competent personnel and provide equal pay for equal work. They should also produce greater efficiency in city government.

Why a New Approach?

Both shared the belief that there are defects inherent in the percentage-step pay plans prevalent in government today. Lakewood had a six-step pay-range plan, with each step approximately 5% higher than the next lower. Hartford had a five-step pay range for most of its classes, but a few years ago deemed it advisable to assign its laboring, trades and equipment-operation classes to a three-step range. However, the traditional 5% between steps and the normal one-year waiting period between step raises was retained.

The principal weakness of such plans is that they do not recognize the many differences between classes of employment. A constant percentage between pay steps implies incorrectly that a man can achieve the same rate of growth on all classes of jobs. This is not true. One need only contrast the potential growth of a journeyman tradesman with that of a beginning-level professional. When the craftsman has completed his apprenticeship and becomes a journeyman, he is fully qualified in his trade. The college graduate beginning a professional career should grow in skill faster and for a longer time. Moreover, a skilled journeyman should not have to wait two years as Hartford required, or four years as in the case of Lakewood, to reach his maximum rate.

Another shortcoming of the familiar pay plan is that it mingles recognition of seniority with other considerations. Seniority should be separate and distinct from compensation for normal growth and improvement on the job.

In its search for a correction of these deficiencies, Hartford engaged Griffenhagen-Kroeger, Inc., to gain the benefits of an outside viewpoint. During the final stages of perfecting the plan in Hartford, Lakewood also became interested.

The solution lay in the development of a salary plan which separated the factors of growth, stability and exceptional service.

Growth. Each class of employment is assigned to a salary range which recognizes that the inherent growth on that job has three dimensions, Frequency, Rate and Span. The salary range is established by determining how frequently growth can be measured—this is Frequency which is expressed in terms of three-month, six-month and annual intervals; the amount of growth in terms of percentage increases within a growth period—this is Rate which is expressed in terms of 3% or 5% increments; and the length of time over which growth occurs—this is Span which is expressed in terms of two, four or six increments beyond the hiring rate.

The application of the above determinations results in six combinations for recognizing growth: (1) A hiring rate plus two 3% increments at three-month intervals, generally used for skilled trades, unskilled laboring and custodial classifications; (2) the hiring rate plus two 5% increments at six-month intervals, generally used for semi-skilled, equipment-operation and laboring and trades-supervisory classifications; (3) the hiring rate plus four 5% increments at six-month intervals, used for selected clerical, technical and second-level professional classifications; (4) the hiring rate plus four 5% increments at annual intervals, generally considered to be the normal growth pattern and used for all classifications not otherwise covered; (5) the hiring rate plus six 5% increments at six-month intervals, used for beginning-level professional classifications; and (6) the hiring rate plus six 5% increments at annual intervals, used for department-head classifications.

Hiring rate. The hiring rate for each class of employment is set either by applying salary-survey information if the class is a key salary-survey class or on a relationship basis to a key salary-survey class. The establishing of the relationships between classes is based on specific criteria which have been clearly defined. They are:

Experience
Training
Complexity
Responsibility
Public contact
Supervisory responsibility
Administrative responsibility
Professional licensing
Special skills or knowledges

(Continued on page 135)

---

* Mr. Sharpe is the city manager, Hartford, Conn., and a past president of the International City Managers' Association. Mr. Goerlick is city administrator, Lakewood, Calif.

"Daddy, is my school safe?"

She has a right to know — it could mean her life.

Are the schools in your city fully protected against fire? No community can have complete protection without Master Fire Alarm Boxes to provide direct line to Fire Department Headquarters. Gamewell Master Fire Alarm Boxes have been chosen because they provide the *most positive* and practical solution to the problem — *The heart of a master plan* to protect life and property.

The Gamewell Company offers your community positive fire alarm protection, backed by the largest plant in the world engaged exclusively in the manufacture of fire alarm systems and emergency signaling equipment. Assure your community's safety, contact Gamewell for complete information. There's a Gamewell office near you. Safety is everybody's business — *our* profession.

Write THE GAMEWELL COMPANY, 1248 Chestnut Street, Newton Upper Falls 64, Massachusetts. A Subsidiary of E. W. Bliss Company.

BLISS Gamewell®

FIRST . . . WHEN SECONDS COUNT

(Continued from page 133)

Stability. The plan provides for a separate recognition for length of service to encourage employees to remain with the city. Any cost of compensating this stability is more than offset by savings in turn-over costs. Basically the plan provides that seniority be recognized at the rate of ½ of 1% of the base rate for each year of service for the first 20 years of service. After that, the stability payment continues at the rate established for the twentieth year.

To provide an inducement to new employees to remain with the city and to avoid payment of a stability factor to casual and short-term personnel, the plan provides for the first payment after five years.

A maximum rate to which the multiplier factor is applied is that base rate which is nearest to being double the lowest rate in the pay plan. This limitation assumes that, in higher classes, other factors than compensation affect stability. In both Hartford and Lakewood, the maximum rate for this purpose proved to be approximately $5,100. This means that the maximum annual longevity payment to any employee would be $510. (20 years x 0.005 x $5,100 = $510).

If, in the future years, the maximum base rate is shifted upward or downward, the maximum on which the stability factor is to be calculated will likewise be shifted by setting it always at twice the lowest rate in the salary plan.

The stability payments are to be made in a single payment each year, payable on December 1 only to those actually in the service on that date. This should serve as an inducement to the employee to remain, and will provide the payment at a time of year when it will be of particular interest and value to him.

Exceptional service. Increments of 5% and 10% of the employee's base rate for authorized periods of three, six, nine or twelve months are permitted to recognize exceptional service beyond the normal requirements of the job, whether by isolated actions such as an act of heroism beyond the call of duty, or by continuing performance at a high level, resulting in direct savings or noticeably improved service to the public.

The time limitation recognizes that exceptional service does not necessarily continue indefinitely. If it does continue, the recognition may be extended by renewing the authorization for additional periods, but not to exceed one year at a time. If exceptional service ceases, so does the recognition.

Both of the cities are developing strict criteria to be applied for granting an exceptional service increment to prevent abuse of this premium rate.

Although the plan may seem complicated, in practice it is not. It appears complex merely because it is more flexible. It requires greater care in its original design for each city, but once established, its application is simple. By making the salary plans more dynamic and more responsive to the realities of their organizations, the authors believe they will encourage better service and improve employee morale. ◄◄

1961 Annual Index

Bound into the back section of this issue of "The American City" is the 1961 Annual Index, arranged according to subject and place.

INTERSTATE
COLORADO
80
S
WEST
WIGGIN

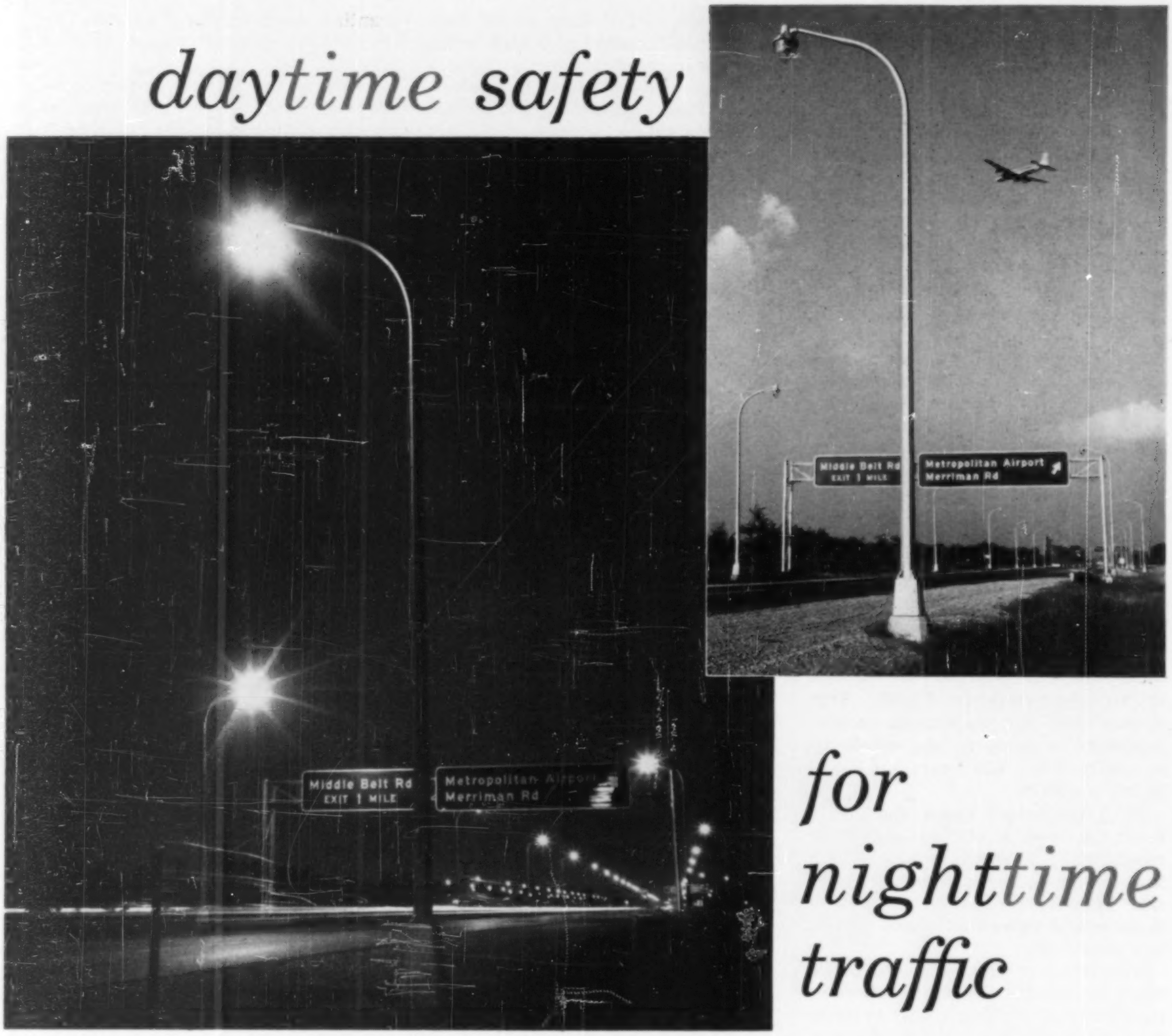
MIRO-FLEX CUTOUTS make sign-assembly to specifications easy and economical!

Pre-cut aluminum numbers, letters, arrows, shapes, corners, and borders, put a full line of signing materials at your fingertips in shop or on-site. You can now make signs to interstate specifications easily and economically. Furnished plain or with choice of plastic lenses, reflective sheeting or unfinished. Years of leadership in sign manufacturing is your guarantee of uncompromised quality. Send for your free catalog of MIRO-FLEX individual cutouts. Design recommended by ASSHO and approved by the Bureau of Public Roads.

THE **MIRO-FLEX** CO., INC.

MS-1161 **1824 E. SECOND ST. • WICHITA 14, KANSAS**

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pa.



daytime safety for nighttime traffic

Traffic is heavy night and day on this highway near Detroit, and the exit shown above feeds two busy arteries. The installation of Millerbernd standards with high-intensity luminaires provides brilliant illumination, not only for the overhead and roadside signs, but also for the roadways themselves. Traffic flows smoothly and safely at all hours.

The Millerbernd davit-type standards in the photo have an integral mastarm. An unusual feature is the tubular extension which will accommodate either mercury vapor, incandescent or fluorescent luminaires.

Millerbernd standards offer many advantages in design, strength, ease of installation and maintenance. Wide range of models available for highways, boulevards, streets, parking lots and building approaches.

Write for Booklet OTB

Millerbernd *lighting standards*

MILLERBERND MANUFACTURING CO. WINSTED, MINNESOTA

A leading national producer of modern lighting equipment since 1946

The City Tells Its Story

Edited by PAN DODD EIMON

Municipal
Public
Relations

Philadelphia information gets better and better

Busy Big-City P R Division Lists Top Ten Promotions

Next year, the 175th anniversary of the U. S. Constitution, people everywhere are going to be reminded of the anniversary and of the fact that Philadelphia was the site of the history-making constitutional convention. The reminder will be a 20-minute full-color musical, "Song of Philadelphia." This is now being produced by Philadelphia's Division of Public Information with Columbia Pictures for world-wide distribution in four languages.

Next year will also be an anniversary for the city's PR division. The 1952 city charter set up the Office of City Representative and, within it, the Division of Public Information (DPI). Recent figures (1959 and 1960) indicate how the division has developed in its ten-year history.

The Division of Public Information regularly draws materials from 30 operating departments and channels it to local and national news media. It serves as the PR consulting service and clearing house for five other city departments which have their own information specialists.

Press releases, which give the initial impetus to coverage by all media, totaled more than 6,000 in the last two years and pictures, most of them set up by the division, topped 2,000.

Local papers printed nearly 1,000 editorials containing information supplied by DPI. The city's newspaper-supplement and film-for-TV annual report reached almost every household. Tens of thousands saw some or several of the weekly TV series about city activities. Potential visitors over the world were reached by folders and displays prepared by the PR unit.

The Deputy City Representative, Abe Rosen, oversees the work of DPI. Chief of the Division is Tony Zecca. Radio and TV work is handled, under Zecca, by Syn Nemiroff. Information officers are Don Middleman, Hal Freeman, Al Hornstein, and Vic Kendrick.

Community relations, including the much-used Speakers' Bureau, are the responsibility of Mrs. Toni Schraga. Betsy Tucker handles ceremonial activities. Special events are coordinated by Mrs. Sylvia Kauders.

The division has an artist-photographer, John Maass, with years of commercial advertising experience. All the staff people have been drawn from newspaper, public relations, and related fields.

As the central information-dis-

(Continued on page 139)

MPR Ideas from Philadelphia

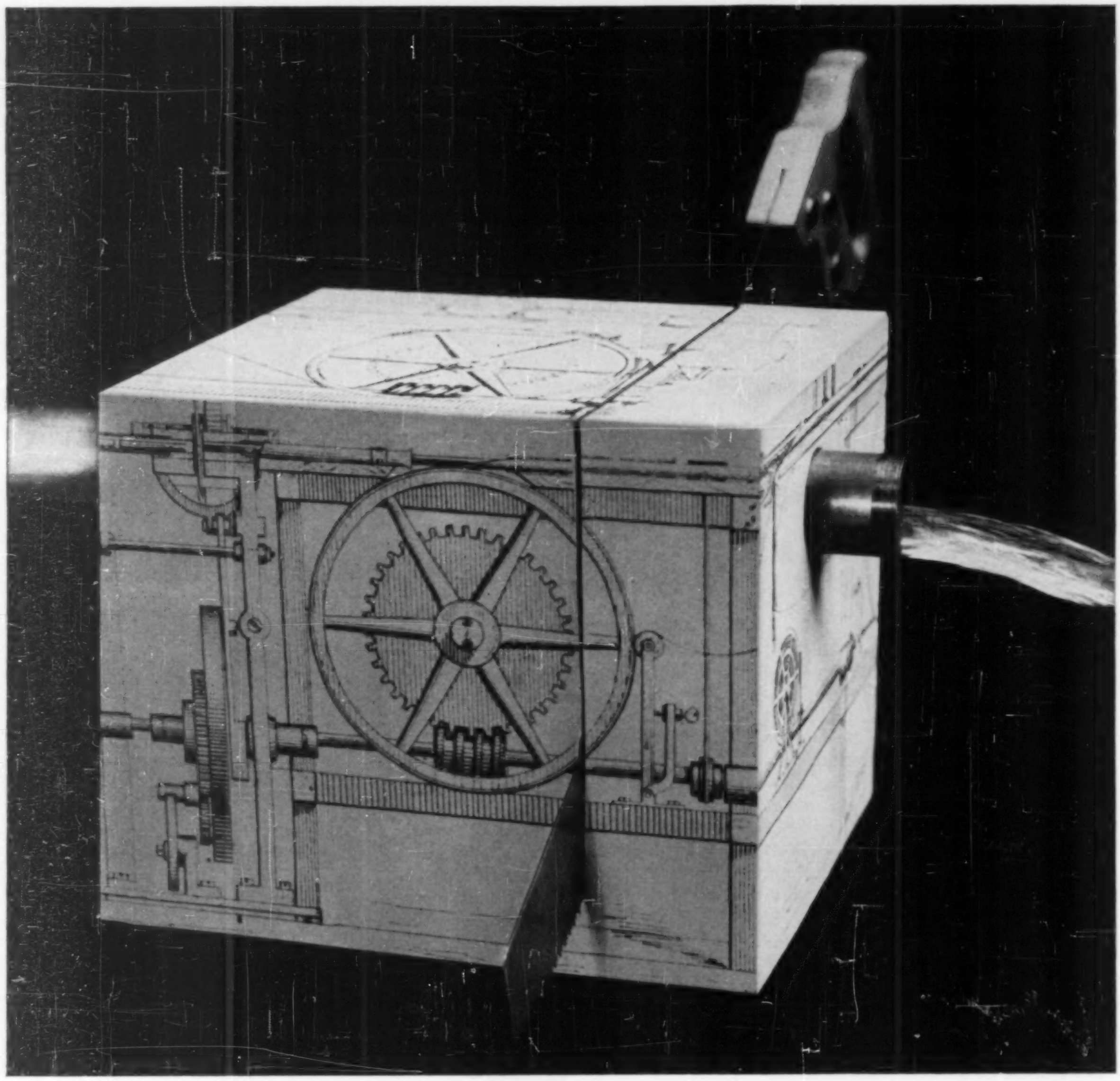
LADIES' DAYS for the "center city" were developed by the Philadelphia Division of Public Information in cooperation with railroads and merchants. There were reduced fares from outlying communities, a tea and fashion show at City Hall.

MISS LIBERTY BELLE is a school teacher selected annually to travel abroad and invite prominent people to visit Philadelphia. This year she went to London and Paris, made dozens of personal, radio, and TV appearances to lure visitors to her city.

TOUR THE TOWER attracted 130,000 people to the City Hall tower last year. The Division of Public Information suggested that it be opened on weekends during tourist season.

TALK OF THE TOWN is a stunning brochure advertising city speakers available to talk to groups. After its publication, requests for speakers tripled. In a year, well over 100,000 club members hear such talks about Philadelphia.

BILLBOARD for city promotion is in heavy demand. Fifty-eight events were publicized on it last year. During many weeks, the big board, on South Penn Square, has to be split to accommodate two concurrent programs.



Get cleaner, clearer water using ¼ the housing space with Celite Filtration

A diatomite filtration system using Celite® filter aids gives you the cleanest, clearest, most sparkling water possible. Yet, this compact unit needs ¼ the housing space required by old-fashioned sand systems. This means substantial savings in real estate and construction costs.

Celite removes all suspended solids including amoebae, residual floc and algae, while efficiently providing the fastest flow rates obtainable. You won't need experts to run a Celite diatomite filter either. These semi-automatic systems can be easily operated and maintained by regular municipal water personnel.

For *maximum* economy, you can add a unit using Celite diatomite to your existing sand plant. It will double present capacity, usually without the cost of additional real estate. Where special water treatment is required, it can often be incorporated into the diatomite installation, reducing the need for separate equipment. For a complete diatomite water filtration study (#FA-74A), or guidance in filtration engineering, write to Johns-Manville, Box 325, N.Y. 16, N.Y., c/o Water Eng. Dept. In Canada: Port Credit, Ont. Cable: Johnmanvil.

JOHNS-MANVILLE

(Continued from page 137)

semination agency of the city, the division promotes a multitude of programs — counseling departmental officials, supplying technical skills in organizing and publicizing events, and releasing information. Such work includes:

Promoting city-wide programs, developed with the city's administrative organization. Examples: intensive publicity on the city's design and financing of the new "el" cars; "vote on the loans"—a continuous promotion to win voters' approval for capital improvement.

Winning public understanding for the city's point of view on certain matters. For example: traffic congestion, snow clearance, conformance to housing and fire codes, payment of water and sewer rates in prescribed times, crackdown on landlords to meet fire-protection needs.

Organizing and publicizing campaigns. Examples: anti-litter campaign which included brochures, radio and TV spots, news releases and pictures, meetings with editors, civic leaders and school officials.

Work with community groups. Films, speakers, special programs about the city and its work, and tours of city facilities are provided for organized groups.

Producing information materials. Examples: the city's annual report; a picture-review, "Philadelphia, the Nation's No. 1 Shrine," distributed by the *New York Times.*

Arranging public events such as groundbreakings for new buildings, dedications of facilities, inductions, receptions and conventions.

Attracting tourists. Examples: producing a fact-sheet on Philadelphia, "Philadelphia Booster Pill," distributed world-wide by airlines and travel bureaus.

Organizing special weeks of which City Employees Week and Freedom Week are examples.

Cooperating with commercial radio and TV resulted in a weekly look at city issues on "Pinpoint" over WRCV-TV; a weekly half-hour documentary on civic problems, "Face of Philadelphia" heard and seen on WCAU-TV; "Eyewitness"—a series for WFIL-TV about problem areas in a large metropolis. WRCV-TV did a 13-week series on "Summertime Is Funtime" showing Philadelphia's historical, educational, recreational, and cultural assets. The divi-

(Continued on page 141)

WORKING MODEL!

■ Big Twin is the motor that dotes on tough commercial boating jobs. Develops 40 hp at 4500 rpm. For 1962, it has a brand new power head for even better all-around performance and even more durability. It sports some of the most advanced features in outboarding—foolproof fixed-jet carburetion, thermostat-controlled engine temperature, vibration-free, sound-sealed power. You even get a choice of props to fit your boat and work. Big Twin is made to out-work, out-last and out-save anything in its power class. If you want value—and value dependability—see your Evinrude dealer. He's listed in the Yellow Pages under Outboard Motors.

Evinrude Motors, 4229 N. 27th Street, Milwaukee 16, Wis.
A Division of Outboard Marine Corporation
In Canada: Mfd. by Evinrude Motors, Peterborough

EVINRUDE
FIRST IN OUTBOARDS

NEW CATALOG!

MUNICIPAL SUPPLIES
No. 163
ESTABLISHED 1908
W. S. DARLEY & CO.
CHICAGO 12

WRITE TODAY FOR
100-PAGE
Municipal Supplies Catalog
SPECIFY YOUR TITLE ON YOUR REQUEST

W. S. DARLEY & CO.
2000 ANSON DRIVE
MELROSE PARK, ILL.

How to Keep Track of Every Key

TELKEE
KEY CONTROL
$73.90 Complete
(75 capacity)

TELKEE simplicity tags and numbers keys, in order. Visible index identifies keys by lock location, number, description.

TELKEE convenience shows all keys at a glance. Locates loaned or assigned keys instantly. Saves time, saves money.

TELKEE security provides complete continuous record of all keys issued. Key identities known only to authorized personnel.

Available in 10 models, 33 capacities from 21 to 2240. Compact cabinet of fine furniture steel, tens of thousands in use in offices, industrial plants, hotels, stores, schools, hospitals, and public buildings, large and small, in U.S.A., Canada, and overseas.

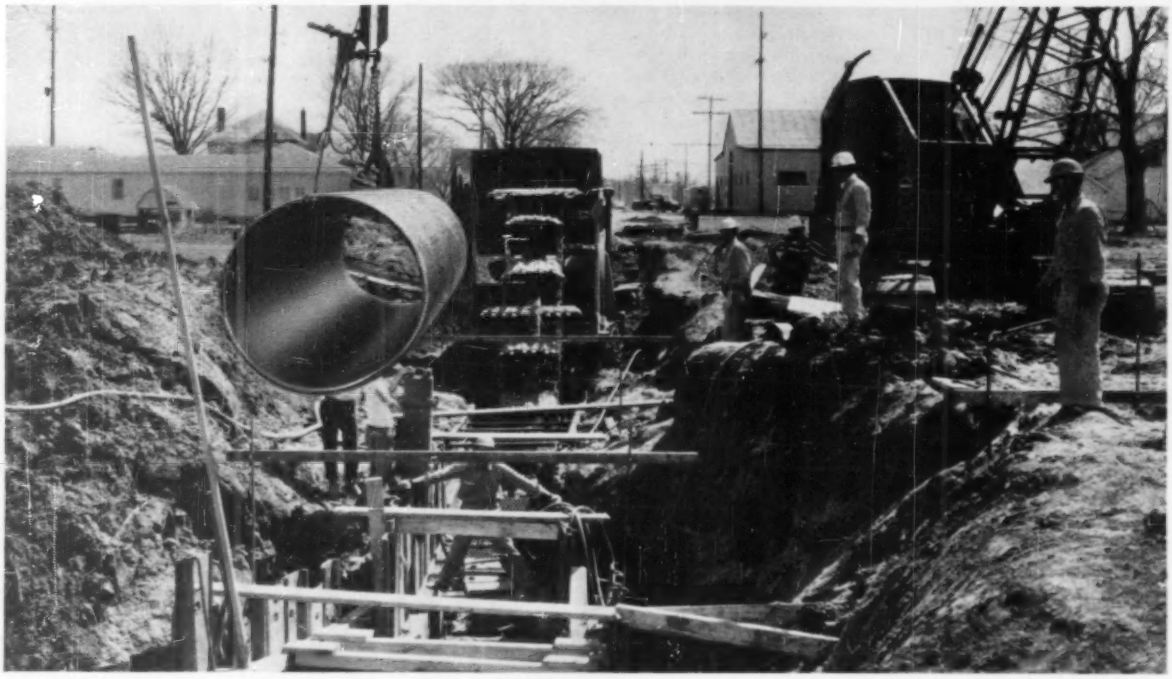
FREE *16 page booklet. No obligation. Write for your copy today.*

TELKEE
P. O. MOORE, INC. GLEN RIDDLE 66, PA.

Steel

For strength,
economy, durability

Topeka selects Armco SMOOTH-FLO Pipe for strength, top flow capacity



When Topeka, Kansas, required an 8200-foot sanitary sewer in high water table conditions, engineers sought a pipe that would be strong enough to withstand heavy loading and still move fluids efficiently. After considering several kinds, corrosion-resistant Armco ASBESTOS-BONDED SMOOTH-FLO® Sewer Pipe was selected.

Corrugated for strength and durability, but covered inside with a smooth lining for high flow capacity, 36-inch SMOOTH-FLO Pipe was placed in a 25-foot average-depth cut. As the picture shows, sheeting was used for shoring and jacks were installed between the 20-foot-long I-beam wales. As the cut was made, the sheeting was moved back and SMOOTH-FLO Pipe was lowered into place.

Find out how Armco ASBESTOS-BONDED SMOOTH-FLO Pipe can help solve *your* sanitary sewer problems. Write to **Armco Drainage & Metal Products, Inc., subsidiary of Armco Steel Corporation, 6991 Curtis Street, Middletown, Ohio.**

ARMCO Drainage & Metal Products

(Continued from page 139)

sion has a radio-TV studio as part of its office.

From an all-star roster of ideas, and promotions, Mr. Rosen selects the following top ten:

Passenger-service improvement—This information campaign to increase ridership on public transport in the traffic-congested center of the city won the Silver Anvil Award from the American Public Relations Association and an award from Pennsylvania State University for "excellence in reporting to the community." Involved was the city's first subsidized rail-commuter plan.

Arts Festival—It was a series of events in the performing and visual arts, over a six-week period, culminated in a display of art forms at the City Art Museum and the making of awards to Philadelphians who have distinguished themselves in art fields: Rudolph Serkin, pianist; the late Paul Douglas, actor; Vincent Kling, architect; Catherine Drinker Bowen, author; Andrew Wyeth, artist; and J. Wallace Kelly, sculptor.

City Employees Week—This is in its fifth year but Representative Rosen says, "we're still experimenting with it." It involves a week-long City Fair on Reyburn Plaza near City Hall with booths featuring the work of different departments.

Center city stimulation—A Philadelphia More Beautiful Committee has stimulated a number of projects of city betterment. Among these projects are: a fall and spring fashion festival, anti-litter drive (promoting a new city ordinance), and a festival of fountains.

Register-and-Vote campaign—the Division of Public Information blanketed the city, using every conceivable public-relations device. A registration total, the largest in years, of 1,017,897 was recorded and more than 915,000 (89% of those registered) did vote. This brought the city the American Heritage Foundation Award.

Annual Report to the People was a Sunday and Monday supplement to metropolitan dailies which, with the cooperation of commercial TV stations, was converted into a film package for showing on Philadelphia outlets. TV newsmen and DPI's staff put the report together using clips from TV news film, made by commercial stations during the year.

Community Relations—In a two-year period, speakers were obtained for 700 club meetings, films were loaned for 225 occasions, and 540 tours of city government buildings were arranged. In all, more than 208,000 club members came in direct contact with the city administration via these activities.

Polio Campaign promotion was carried on in cooperation with the Health Department. It involved mass immunization with a door-to-door canvass and shots given on touring buses. Results: 60,000 shots given in a five-day period.

Publications such as the seasonal folders on each quarter of the year in Philadelphia (for tourists), "The Song of Philadelphia," a pictorial brochure which is the basis for the musical already mentioned, and "Your City at Your Service," a brochure in Spanish as well as English.

Freedom Week is a promotion which has been built around the Fourth of July. This year it embraced the selection of Miss Liberty Belle (see boxed "ideas"). Youngsters born on the fourth of July came from the thirteen original colonies. The flag that flew into space was raised over Independence Hall. ◄◄

For copies of publications mentioned, write directly to: Division of Public Information, City Hall, Philadelphia, Pa.

FLEXICROME

90% of the Cities in the United States use this ROD for cleaning sewers . . .

THERE MUST BE A REASON!

- BEST BY LABORATORY AND FIELD TEST
- SPECIAL STEEL FOR SEWER RODDING
- ACID RESISTANCE TREATED
- GROOVED COUPLINGS

FLEXICROME RODS are the end result of many years of field and laboratory tests. When you specify **"Flexicrome"** you get these important, exclusive features:

* **Special alloy steel for extra toughness and durability.**

* **Heat fused rod coating for better sewer acid resistance.**

* **Solid center, grooved couplings for extra rod end support, and faster assembly.**

Patent No. 2,471,060

FLEXIBLE INC.

3786 Durango Ave. • Los Angeles 34, Calif.
LIMA, OHIO
DALLAS, TEXAS

This article is the third in a series devoted to the investigation of sewer-service charges. This information compares and illustrates the differences between metered and flat charges. Future articles will analyze these differences in greater depth and with related problems.

Modern Sewer-Service Charges—Part III

Metered vs. Flat

Once a municipality decides to employ sewer-service charges to finance sewerage works, it faces the problem of which type to use. The results of this and other surveys indicate that a slight majority of those cities which use sewer-service charges favor the type based on metered water use rather than a flat rate.

Although some authorities list as many as 18 different types of charges, all of these fall into two general categories: flat and metered. The metered charge varies with the amount of water used. The flat charge creates one or more groups which pay the same fee. Some cities employ a combination of these, but almost all differ from one another in such features as rates, minimums, maximums, fixture charges, front foot or area fees. It is as difficult to locate two cities with identical systems as it is to discover two snowflakes alike—or two canines in a dog pound which resemble each other. Each city apparently chooses one of the two basic systems and modifies it to reflect local needs and preferences.

Metered Charges

Inasmuch as more than 85% of the water distributed today is metered, why don't metered sewer charges enjoy the same degree of popularity rather than just a slight majority? Some of the reasons are these:

- **There is no inexpensive and convenient sewage meter.**
- **All of the water which flows through the customer's water meter does not find its way to the sewer.**
- **Where there is a private water company or a separate municipal board, the water-meter readings may not be readily available.**
- **Flat rates usually reduce administration costs somewhat.**
- **The difficulty of treating the sewage varies with strength as well as with volume.**

Many of the cities which employ charges based on water-meter readings have overcome these objections by adjusting their sewer-service charges to allow for sprinkling and air conditioning water, which does not reach the sanitary sewer. Some gain access to the private board or water company's meter readings or reimburse this utility for computing and mailing the bills for sewer-service charges. Some also levy a surcharge for sewage of more than average strength or prohibit its discharge into the sanitary sewers without pretreatment.

Chippewa Falls, Wis., is one of the cities which employs a sewer-service charge based on metered water use. Although some schedules list sewer-service charges as a definite ratio to the water bill, this one provides a separate system of block rates. The minimum charge for residential and Class I Industrial is $3 a quarter for 2,000 cubic feet or less. For those users who maintain lawns, the meter reading for the first quarter supersedes those of the second and third if they are higher. By this method the city avoids penalizing those who sprinkle their lawns.

The Chippewa Falls rates follow:

CHIPPEWA FALLS, WIS.

Rates Per Quarter

Residential and Class I Industrial:

Cubic Feet	*Per* 1,000 *Cubic Feet*
First 10,000	$1.50
Next 30,000	1.00
Next 60,000	.70
Over 100,000	.50

Class II Industrial:

First 50,000	$1.50
Next 50,000	1.00
Over 100,000	.50

The minimum charge for creameries not processing butter is $15 per quarter, for those that process butter the minimum charge is $30 per quarter. For poultry-killing establishments the minimum charge is $60 per quarter; for dry-milk producing plants and cheese-making plants, the minimum charge is $275 per quarter.

The minimum residential and Class I industrial charge is $3. Class I Industrial includes waste which has less than 400 ppm of BOD. Class II includes any who exceed that amount. A special agreement with large contributors includes a payment of one cent per case of No. 2 cans of vegetables if the cannery uses less than 60 gallons of water per case. Where the use exceeds this amount, the rate is 50% higher.

Related Information

Population	12,800
Population served by sewers	12,000
Average flow, mgd	2.8
Annual sewer-service charge revenue	$74,483
Distribution of revenue:	
Plant operation and maintenance	$33,426
Other	41,057

Remarks

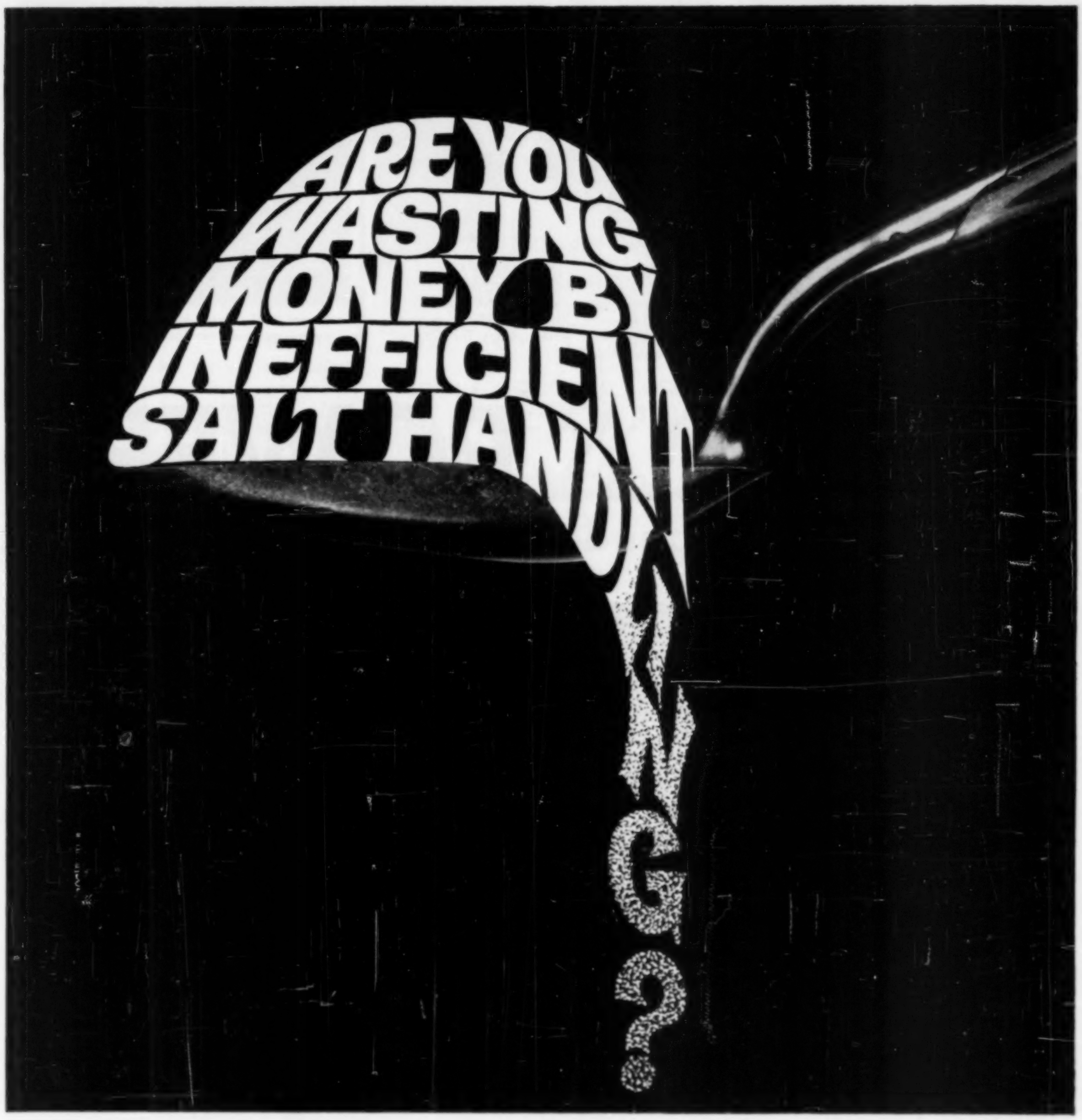
The sewer-service charge appears on a separate bill. The plant is nine years old and includes digestion, aeration and chlorination. The sewer-service charges also date back nine years. They pay for bond and interest costs, a depreciation fund and op-

(Continued on page 145)

YEARLY SEWER AND WATER BILLS
for small and large families

	Family of 2		Family of 12	
	Sewer	Water	Sewer	Water
Chippewa Falls, Wis. (metered)	$12.00*	$14.40	$34.56	$50.04
Sherman, Texas (flat)	10.20	24.48	10.20	110.88
Littlefield, Texas (flat)	12.00	39.60*	12.00	72.36

* minimum bill


ARE YOU WASTING MONEY BY INEFFICIENT SALT HANDLING?

LET MORTON SALT COMPANY SPECIALISTS IN SALT ADVISE YOU WITHOUT COST OR OBLIGATION! Nowadays there are almost as many ways of handling salt as there are companies using it.

Obviously some are more efficient than others. But often it takes a real expert in materials handling to know which of two or three methods is *most* efficient.

Because of its multiplant operations from coast to coast, Morton Salt Company has gained wide experience in all phases of salt handling. Today Morton maintains a department whose sole function is to advise on salt handling problems. There is no cost or obligation whatsoever for this service.

Just fill out and mail the coupon at right, and you will be contacted soon! Do it now—it may mean considerable savings plus increased efficiency for you!

ANOTHER SERVICE OF MORTON
THE ONLY NATION-WIDE SALT COMPANY
FILL OUT THIS COUPON NOW

Yes, I am interested in ways to save money in handling salt.

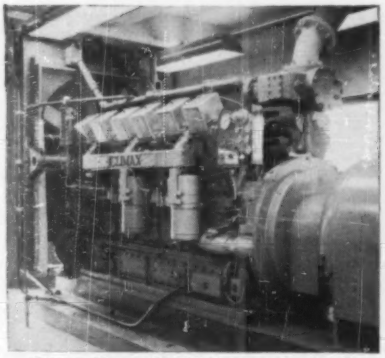
NAME______________________________

COMPANY____________________________

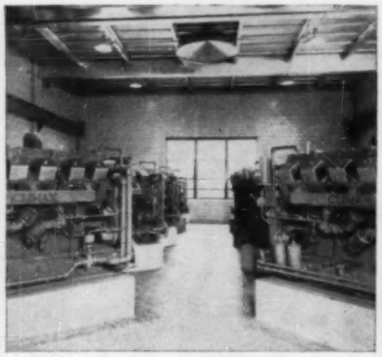
ADDRESS____________________________

CITY________________ZONE_____STATE________

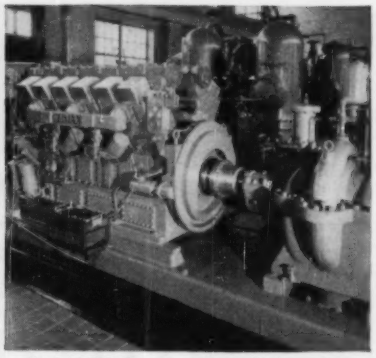
MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. AC-12, 110 N. Wacker Drive, Chicago 8, Ill.



Climax-driven 250 KW generator in St. Petersburg, Florida, water treatment plant protects against power failure.



Eight of fourteen Climax V-12 500 hp. engines powering storm water pumps for City of Saginaw, Michigan.



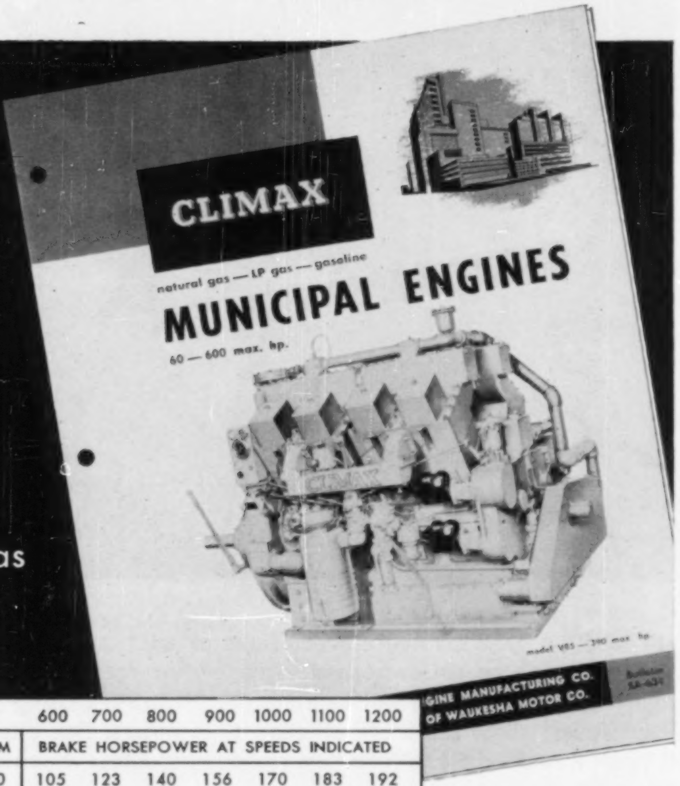
Model V-12 Climax engine in high capacity centrifugal pump service in a city water plant.

CLIMAX POWER

for dependable water plant service

Climax engines provide excellent low cost power for sewage and water treatment plants. These rugged, simply designed engines are engineered to give quick acceleration, withstand overloading, and perform longer with less maintenance.

natural or sewage gas
LP gas • gasoline
60 to 600 max. hp.



CLIMAX

natural gas — LP gas — gasoline

MUNICIPAL ENGINES

60 — 600 max. hp.

BASIC MAX. ENGINE HP (Natural Gas and Gasoline) ①					600	700	800	900	1000	1100	1200
MODEL	No. of Cyls.	Bore & Stroke	Displ.	Torque @ RPM	BRAKE HORSEPOWER AT SPEEDS INDICATED						
R-165	6	6⅛ x 7	1238	930 @ 750	105	123	140	156	170	183	192
K-67	6	7 x 7	1616	1240 @ 805	140	165	188	210	230	248	265
K-75	6	7½ x 7	1855	1410 @ 800	160	186	214	240	265	286	304
V-80	8	7 x 7	2155	1610 @ 850	178	210	241	272	300	323	340
V-85	8	7½ x 7	2474	1860 @ 900	207	249	285	317	345	370	390
V-122	12	7 x 7	3232	2440 @ 900	280	330	380	420	460	490	520
V-125	12	7½ x 7	3711	2880 @ 850	310	370	435	490	540	580	605

① Basic engine includes ignition, maximum carburetion, and water pump. Ratings indicate maximum horsepower.

send for
BULLETIN
SA-631

CLIMAX ENGINE MANUFACTURING CO. • FACTORY—CLINTON, IOWA
DIVISION OF WAUKESHA MOTOR COMPANY

CL-121

(Continued from page 142)

eration. If the user fails to pay his bill by the first of the month following the quarter just ended, he becomes subject to a 10% penalty.

CLYDE F. LEHMAN
Superintendent
Sewage Treatment Plant

Flat Rates

A great similarity exists from one city to another with respect to metered rates; the same is not true of flat rates. However, these usually assume one or some combination of the following forms:

- **A uniform fee for all customers.**
- **Uniform fees for similar groups of customers.**
- **A fee based upon the number and type of plumbing fixtures.**
- **A fee varying with the number of sewer connections from each property.**

Surveys show that the smaller communities use flat rates to a greater extent than do larger cities. The advantage of most flat rates lies in the simplicity of the rate structure and ease of administration. These rates tend to discriminate, however, when cities become larger and consequently more complex because the sewage contains a greater variety of strength and volume from individual contributors. In those relatively few communities where metered water readings are not available, no reasonable course exists but to choose some type of flat rate.

Littlefield, Texas, employs a flat-rate sewer-service charge which contains three classifications. The monthly charge for a residence is $1; for a service station with wash rack, $2; and for commercial buildings and depots, $3. The administration is simple and no serious inequities develop.

LITTLEFIELD, TEXAS

Monthly Billing

Residence or Business	$1
Service Station with Wash Rack	$2
Office Building or Depot	$3

Related Information

Population	7,236
Population served by sewers	1,800
Miles of sewer mains	26.43
Annual sewer-service charge revenue	$21,085.90
Distribution of revenue:	
Plant operation and maintenance	5,150.00
Sewer construction	14,000.00
Other charges	1,935.90

Remarks

An Imhoff tank of uncertain age treats the sanitary flow. If the customer does not pay his sewer and water bills within ten days, he is subject to a 10% penalty. All residences and businesses within 200 feet of a sewer line must connect. No free service is available; municipal buildings, schools, churches and all others must pay sewer and water charges.

J. W. HARRISON
City Manager

Sherman, another Texas city, bills sewer users monthly on the basis of 85 cents for the first commode, 17 cents each for the next 12 and 10 cents each for all additional ones. This type of flat rate represents an attempt to charge somewhat in proportion to volume. Since some commodes are definitely busier than others, the attempt often fails. This city raised the former fixture rates about 70% last year when it issued bonds for a plant addition. The complete information follows:

SHERMAN, TEXAS

Monthly Billing

First commode	$.85
Next 12, each	.17
Over 13, each	.10

Related Information

Population	28,500
Population served by sewers	28,000
Average flow, mgd.	2.0
Miles of sewer mains	120
Annual sewer-service charge revenue	$65,610.19

Remarks

Sherman is constructing an addition to the 1929 plant. The treatment will include

(Continued on page 147)

You **could** VOTE ON ADDING MACHINES! . . . and they **would** add correctly . . . BUT! . . . you would **not** have an accurate election . . . because adding machines are **not** AUTOMATIC VOTING MACHINES . . . which not only add votes immediately, accurately, reliably and safely . . . but which also prevent voter error and spoiled ballots . . . which prevent accidental or intentional ballot marking contrary to law . . . and most important, protect election integrity by assurance of ballot secrecy and full protection against fraud.

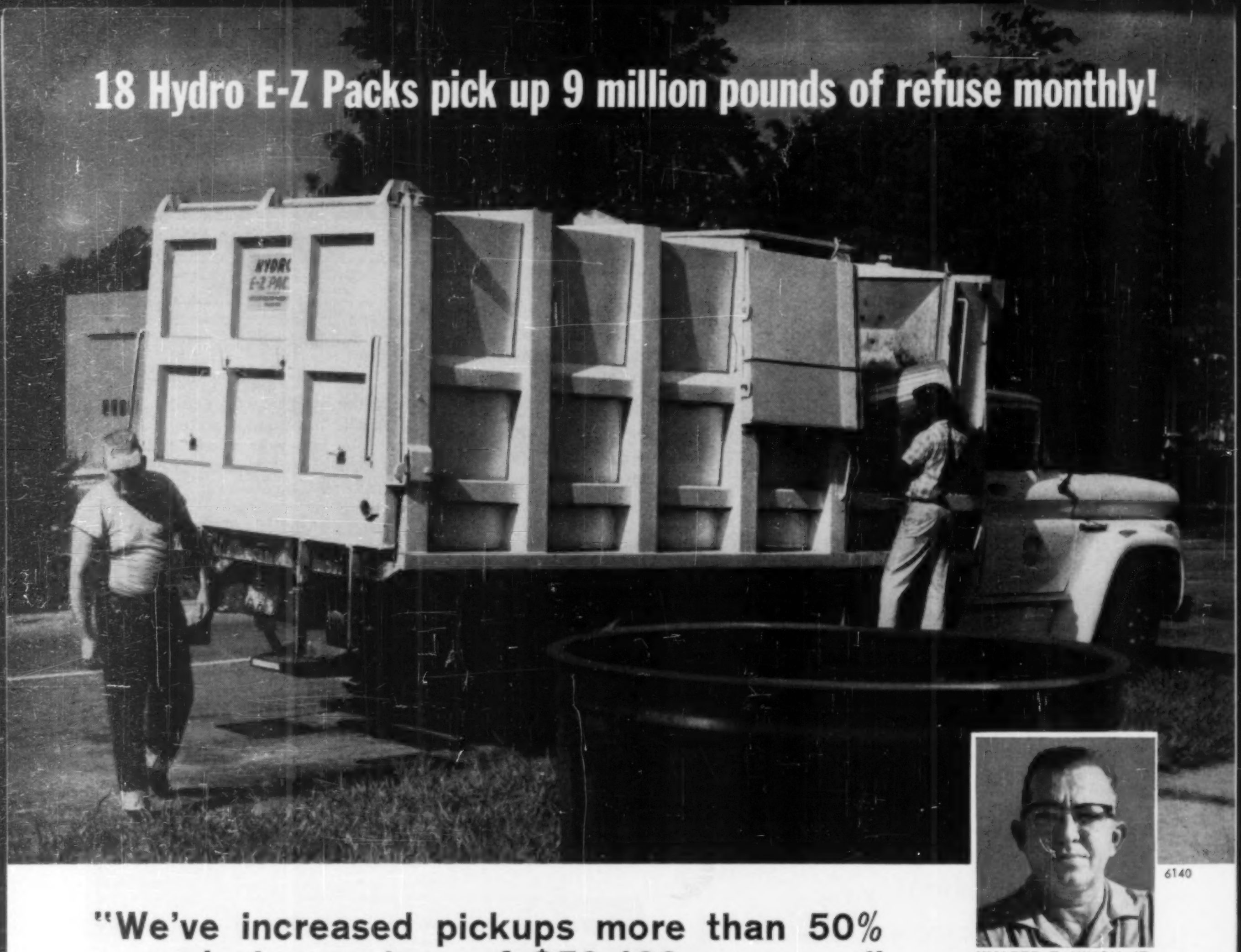
•

SIXTY-ONE CONTINUOUS YEARS OF ELECTION EXPERIENCE ARE BUILT INTO THIS AUTOMATIC VOTING MACHNE

PRODUCTS FOR THE PUBLIC GOOD

AUTOMATIC VOTING MACHINE
division of Rockwell Manufacturing Company
Jamestown, N. Y.

18 Hydro E-Z Packs pick up 9 million pounds of refuse monthly!



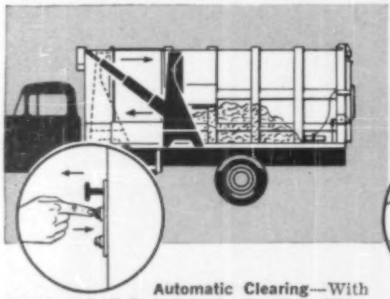
6140

WALTER E. MIXON, JR.
Superintendent,
Dept. of Sanitation
Jackson, Mississippi

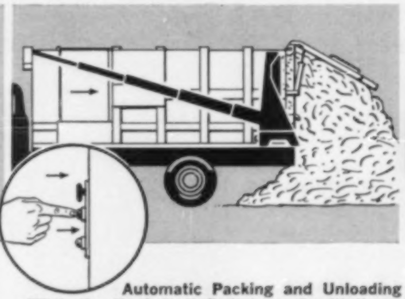
"We've increased pickups more than 50% ... and at a savings of $50,400 per year."

The city of Jackson, Miss., is served by a fleet of 18 Hydro E-Z Packs which pick up more than 9 million pounds of refuse every month. To handle this huge refuse pickup, Walter E. Mixon, Jr., Superintendent of the Jackson Department of Sanitation, chose Hydro E-Z Pack. "Hydro E-Z Packs do a more thorough and complete job than any other type unit we tested," says Mixon. Jackson's E-Z Pack fleet *services more than* 21,000 homes and 1600 businesses. What's more, the annual operating cost of their refuse removal program has been reduced $50,400. A savings of $2800 for each E-Z Pack in operation. Trips to the dump have been reduced too, because of the high compaction rate of 76,600 pounds exerted on the load in every E-Z Pack.

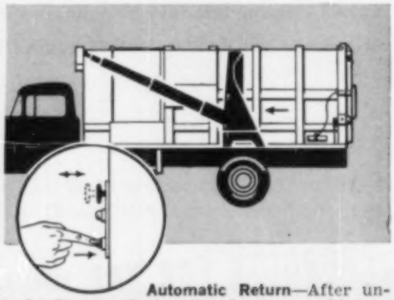
Refuse removal problem? See your Hydro E-Z Pack Distributor or send for free copy of "The Big Squeeze."



Automatic Clearing—With the Push-Pull Switch in the "out" position, the middle button is depressed and the packer blade clears the loading hopper area; then returns to its original position, automatically



Automatic Packing and Unloading—With the Push-Pull Switch in the "in" position, the middle button is depressed and the packer blade moves to the rear of the body exerting pressure to compact the load. To unload, the same procedure is followed.



Automatic Return—After unloading, or during the clearing, packing or unloading cycles, the packer blade can be returned to original position by depressing lower button regardless of setting of Push-Pull Switch.

Hydro
E-Z
PACK

HYDRO E-Z PACK®

DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO U.S.A.

(Continued from page 145)

a settling tank, trickling filter and aeration tank. No penalty or discount exists for water or sewer bills.

R. B. Aston, Jr.
Office Manager
Water and Sewer Department

Both Littlefield and Sherman meter the water use but employ a type of flat-rate sewer-service charge. Both include water and sewer charges on the same bill. Although those who use more than the minimum amount of water pay bills which vary from one period to another, their sewer-service charges remain constant.

For a standard fee, a family with a dozen members pays no more toward sewerage works than a family of two, even though the volume of waste water contributed may vary greatly. Metered sewer-service charges with a reasonable minimum would yield fees more nearly proportional to use as indicated by the table of yearly bills for theoretical families of 2 and 12 persons who live in each of the aforementioned cities, have one bathroom and use water at the rate of 40 gallons per capita per day.

The table appearing on p. 142 aptly illustrates that the Wisconsin families pay sewer-service charges which reflect the volume of sewage contributed, whereas the Texans do not. The ratios of the sewer bills to the water bills for the two Wisconsin families are 83% and 69%, respectively. The corresponding ratios for the Sherman families are 42% and 9%; and for the Littlefield families, 30% and 17%.

These comparisons indicate that metered rates yield revenues more nearly proportional to the volume of sewage. Particularly where treatment plants and pumping stations exist, this volume factor, as opposed to the readiness-to-serve factor, assumes more importance. A small city containing only minimum-sized mains which never run full might apply a flat-rate charge without a shadow of discrimination if no plant exists. Those which do not fulfill all these conditions will treat their customers in a more equitable manner if they base sewer-service charges, at least in part, on volume.

REFERENCES

1. "Service Charges For Sanitary Sewers," C. H. Hoper, *Water & Sewage Works*, October 31, 1960.
2. "Sewer Service Charges," *Minnesota Municipalities*, February 1950.
3. "Modern Water Rates and Sewer Service Charges," The American City, June 1949.
4. "Sewage Service Charges in Cities of Over 5,000 Population," American Public Works Association, November 1953.
5. "Sewerage Service Charges," Samuel Robert Wright. Bulletin No. 98 of the Agricultural and Mechanical College of Texas. 1947.

All-America cities finals

Twenty-one municipalities and one county are competing in the finals for the coveted All-America Cities awards. The names of the finalists were announced recently by William Collins, president of the National Municipal League, co-sponsor of the awards with *Look*.

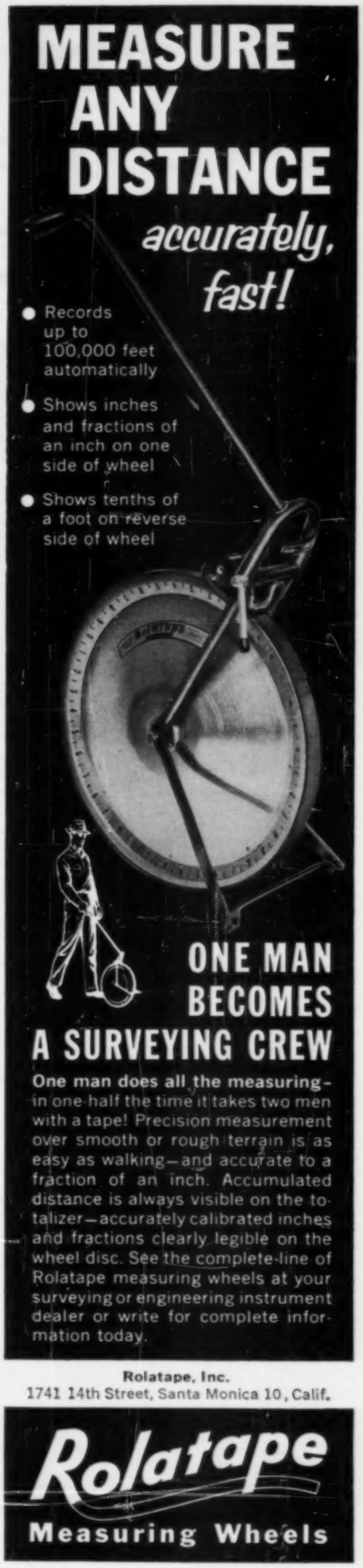
The 22 finalists are: Lynwood, Calif.; Santa Clara County, Calif.; Hartford, Conn.; Fort Lauderdale, Fla.; Sioux City, Iowa; Topeka, Kan.; Wichita, Kan.; Louisville, Ky.; Rockville, Md.; Wilmington, Mass.; Independence, Mo.; Asbury Park, N. J.; Salisbury, N. C.; Galion, Ohio; Portsmouth, Ohio; Milton-Freewater, Ore.; Erie, Pa.; Galveston, Texas; Provo, Utah; Falls Church, Va.; Anacortes, Wash.; and La Crosse, Wis.

The All-America Cities jury hearings to select the 11 winners were held during the 67th annual National Conference on Government in Miami, Fla., November 30th to December 1st. Dr. George H. Gallup, director of the American Institute of Public Opinion, heads the jury. All finalists were on hand to report their achievements.

The 22 finalists were selected from 82 qualified entrants by a screening committee of experts on governmental and community affairs. The committee includes Mrs. Fred L. Bradfute, former president, League of Women Voters of New York State; Charleton Chute, executive director, Institute of Public Administration; Bayard H. Faulkner, former mayor of Montclair, N. J.; Gerald N. Hardy, director of Field Service, Tax Foundation; and Miss Betty L. Knox, member of City Council, Hartford, Conn.

The contestants range geographically from coast to coast and include small towns, medium-sized cities and metropolitan centers. They all have one thing in common—their citizens show unusual energy and initiative in attacking and solving major community problems.

The 11 winners will be announced early next year. ◄◄


MEASURE ANY DISTANCE *accurately, fast!*

- Records up to 100,000 feet automatically
- Shows inches and fractions of an inch on one side of wheel
- Shows tenths of a foot on reverse side of wheel

ONE MAN BECOMES A SURVEYING CREW

One man does all the measuring—in one-half the time it takes two men with a tape! Precision measurement over smooth or rough terrain is as easy as walking—and accurate to a fraction of an inch. Accumulated distance is always visible on the totalizer—accurately calibrated inches and fractions clearly legible on the wheel disc. See the complete line of Rolatape measuring wheels at your surveying or engineering instrument dealer or write for complete information today.

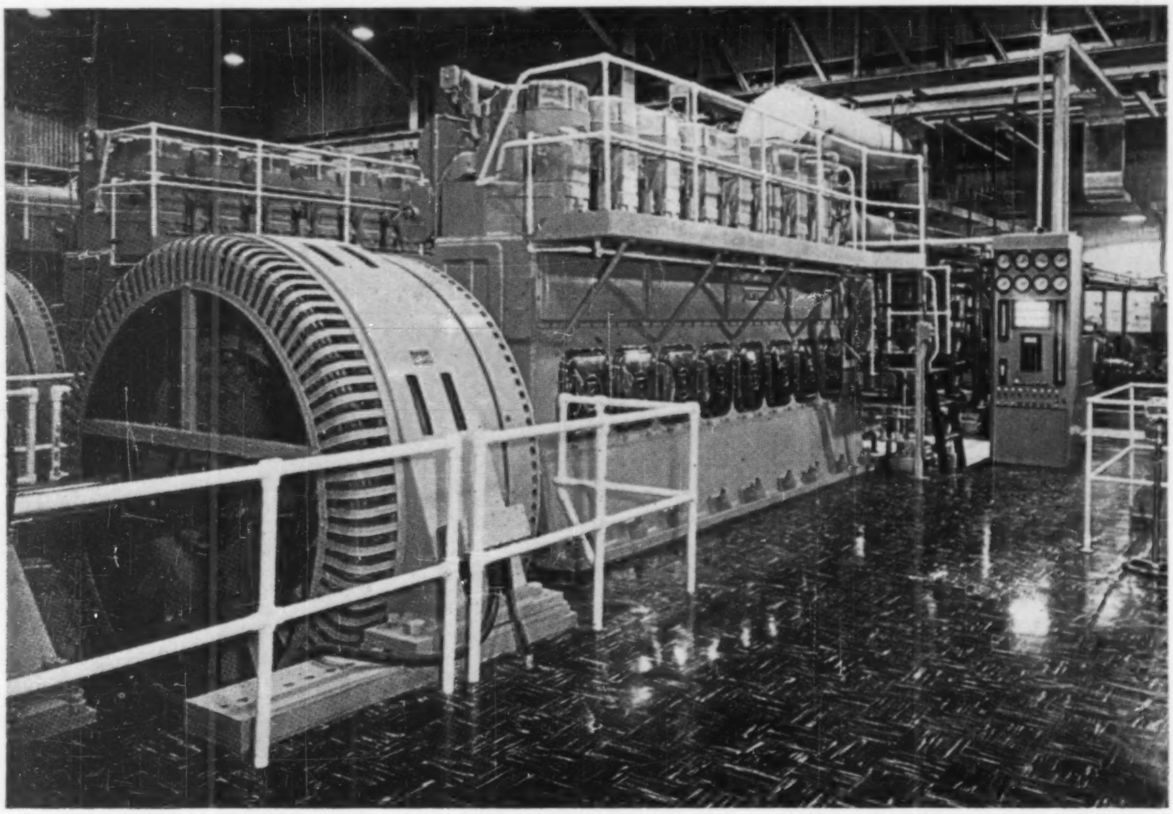
Rolatape, Inc.
1741 14th Street, Santa Monica 10, Calif.

Rolatape
Measuring Wheels

MORE POWER

to the CITY OF RAYNE, LOUISIANA

...from ENTERPRISE



Enterprise heavy-duty Engines are designed for the most exacting requirements—in electric power generation, sewage power plant and pumping systems—size from 73 to 7703 hp—using diesel, dual-fuel, tri-fuel or spark-ignited gas.

These two new 1750 KW Enterprise Engine Generator Sets assure the citizens of Rayne, Louisiana, of an adequate and *dependable* source of electric power.

ENTERPRISE

ENTERPRISE *Engines*

Power Division of General Metals Corporation

A SUBSIDIARY OF TRANSAMERICA CORPORATION

550 85TH AVE., OAKLAND 21, CALIF. • 37-02 48TH AVE., LONG ISLAND CITY 1, N. Y. — National and worldwide sales and service

ZONING AND PLANNING DECISIONS

Edited by NORMAN WILLIAMS, Jr.

Single-Family vs. Commercial Zoning—Type of Relief Granted

FLORIDA. *Schoenith* v. *City of South Miami*, 121 Southern (2d) 810 (District Court of Appeals (intermediate court), July 21, 1960).

In this case the owners of land zoned for single-family use challenged the zoning on the ground that the land should be used for commercial purposes. The Court below found the existing zoning unreasonable, but—instead of merely permitting commercial use—issued a decree permitting duplexes as well as single-family dwellings on the land. The owner appealed, again seeking to obtain commercial zoning.

The Court reversed the decree below, on the ground that it was not the proper function of a court to decide on the appropriate zoning; and a revised decree merely required that the city should rezone the property for some less restrictive use.

The revised decision, leaving the choice of appropriate zoning to the zoning authorities, is clearly correct. On the other hand, even the lower court opinion would be an improvement upon what is frequent practice—when, if the existing zoning is found unreasonable, the challenger is automatically given the right to do whatever he happened to ask for.

Special Conditions Attached to Grants of Variance—Use of Zoning to Implement Highway Plan

CALIFORNIA. *Bringle* v. *Board of Supervisors of County of Orange*, 345 Pacific (2d) 983 (November 13, 1959), reversed 4 (West's) California Reporter 493 (Supreme Court, May 6, 1960).

In California, a municipality apparently can attach a condition to a grant of variance in which the relationship of the land use and the condition of variance is hard to document.

The decision has its background in a five-year variance granted to permit the storage of heavy machinery on a tract zoned for agriculture but not apparently suited for that purpose. Much of the area was paved when the owner sought to have the variance renewed, the County Planning Commission attached a condition to its consent, that the owners should donate to the county an easement for a strip of 30 feet wide along an adjacent road for future street widening. The Board of Supervisors approved the variance, subject to this condition, since apparently widening of the street had been planned beforehand.

The intermediate court held that the condition was invalid, that it had nothing to do with the proposed use of the land, and was, in effect, an attempt to use the renewal to get land free (THE AMERICAN CITY, August 1960, p. 193). However, the highest California court reversed this decision by vote of five to two.

In its opinion, the Court noted that the California zoning enabling act indicates that the Board's action is a proper use of zoning. Specifically, the Court stated that:

> "Conditions may be attached to the granting of a variance in order to preserve the general purposes and intent of the zoning ordinance.
>
> "One of the general purposes is to provide for adequate streets and highways and a street that might be adequate for the needs of an agricultural area might be inadequate if part of the area is to be used for another purpose. In an analogous situation it has been held that a city may require the dedication of land for the widening of an existing street as a condition to its approval of a subdivision map and that such a condition, where reasonably related to the increased traffic and other needs of the proposed subdivision, does not constitute a taking of private property without compensation."

Turning to the specific case, the Court leaned heavily on the presumption of validity of official proceedings. It held that, in the absence of any evidence in this record to the contrary, the plaintiff's activities

(Continued on page 150)

HEAT MELTS ICE

A carload of Columbia Calcium Chloride gives you over

15 MILLION BTU OF HEAT

for faster bare pavements . . . safer driving

This speedy heat is released when Columbia Calcium Chloride (High-Test Flake) goes into solution in contact with ice or snow. It triggers rock salt at **all** temperatures in mixes. And it's the premium ice melter for trouble spots.

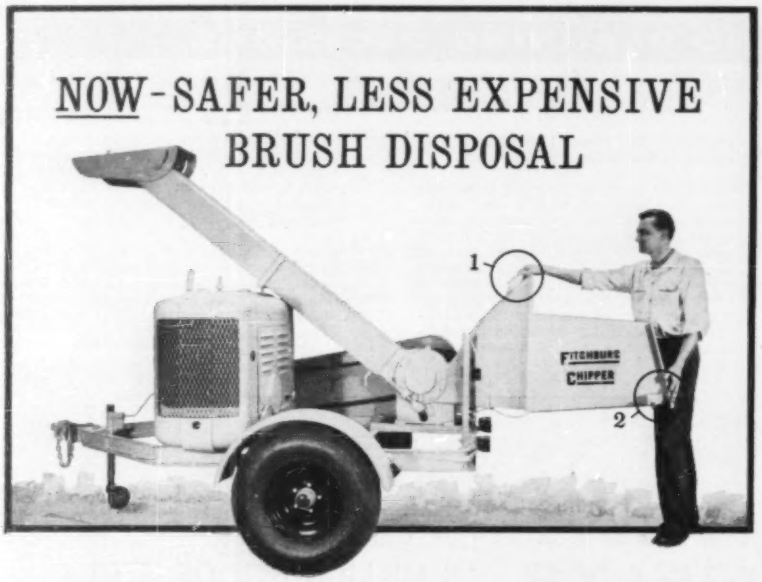
TRY THIS SIMPLE TEST—Fill a cup ⅓ full with Columbia Calcium Chloride flakes. Add enough water to cover and **feel** the instant heat produced!

Specify heat-producing **COLUMBIA CALCIUM CHLORIDE**

PPG chemicals

PITTSBURGH PLATE GLASS COMPANY • CHEMICAL DIVISION
One Gateway Center, Pittsburgh 22, Pa.
DISTRICT OFFICES: Boston • Charlotte • Chicago • Cincinnati • Cleveland Dallas • Houston • Minneapolis • New Orleans • New York • Philadelphia Pittsburgh • San Francisco • St. Louis • In Canada: Standard Chemical Limited

NOW-SAFER, LESS EXPENSIVE BRUSH DISPOSAL



FITCHBURG CHIPPER

adds 2 new important features

1 EXTRA SAFETY. The Fitchburg Chipper is *already considered* safest. NEW SAFETY STOP SWITCH gives *extra* protection—stops all moving parts of the chipper *within seconds*. This important new feature is standard equipment on all new models.

2 EXTRA ECONOMY. Why pay the full gas bill *between* brush feedings? No need to with NEW SOLENOID SWITCH*—allows operator to idle the motor when he's not feeding brush. You save on gas and engine wear, even get quieter operation. This new switch is easy to reach from normal feed position.

Insist on a chipper which gives you these major advances in safety and economy—specify FITCHBURG CHIPPER. This rugged, well-engineered machine chips smoothly and *fast*. Exclusive *spring-activated* feed plate gives you a positive feed with less whipping of the brush. Special alloy blades retain keen edge for a long time. You'll have less brush disposal headaches when you specify FITCHBURG. There's a model to fit your needs. Send coupon for more facts.

*Optional

FITCHBURG ENGINEERING CORPORATION
Fitchburg, Mass. Dept. AC-112

Please send free facts about Fitchburg Chippers, models, and prices.

Name________________________

Address________________________

City______________ State________

(Continued from page 149)

relating to this land use may generate the additional traffic which would require the street widening.

This is a case where a narrow holding is less defensible than a broader one would have been. The argument that the street widening is in some manner connected with the proposed activities appears thin, particularly in the case of a perpetual dedication required in connection with a five-year variance. However, partly because of the state of the record, the Court did rest the decision in part on this possibility.

This case, therefore, approached — but does not really become—a ruling that a local government may use a zoning regulation (including conditions imposed on the grant of a variance) to implement other parts of the master plan, including the plan for streets in the community. An important body of law is beginning to build on this question of the inter-relationship of various planning devices: *Bringle* just misses being an important contribution.

Dade County Re-endorses Metro in Close Election

Residents of Dade County, Fla., once again endorsed their metropolitan form of government as a record number of voters turned out to cast their ballots in the October 17th election. It was Metro's third and most severe test since the formation of this centralized county government a short five years ago.

Nationwide attention was directed toward the outcome of the election. Other metropolitan areas, plagued by multiple jurisdictions, have kept a watchful eye on the Dade County operations.

The final vote totals were extremely close, however, with 105,097 voting in favor of the existing organization and 97,170 favoring a return to local governmental authority in each of the 27 different municipalities composing Metro. This is a slim majority of only 52%.

Metro officials are, of course, jubilant over the outcome but they are also very much aware of the need to take a closer look at certain areas of misunderstanding.

Appointed last May as the political storm was beginning to brew, County Manager Irving McNayr immediately began a reorganization of particular phases of governmental structure. This was followed by an extensive public-relations program to inform county residents of its effectiveness.

Departmental budgets were trimmed, county agencies streamlined and McNayr made hundreds of speeches in defense of his administration. He was quick to point out that Metro itself will sponsor the next drive for charter revision by election. ◄◄

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Annexation—Constitutional Provision Providing for Uniformity of Taxation Not Violated

Under statute by which city annexed territory, provision that, until sanitary sewer services were available to the real property incorporated in city, such property shall be exempt from stated amounts of ad valorem tax for each service not provided, and as services are provided, the ad valorem tax shall be added, did not violate constitutional provisions calling for uniformity of taxation. *Parker* v. *Mayor, etc., of Savannah,* 115 S.E.2d 555 (Ga., July 7, 1960)

Assessments—Trade-in Automobiles—Dealer Liable for Mercantile Tax

Where automobile dealer accepted automobile as trade-in, held dealer was liable for mercantile tax on cash payment and the value assigned by parties to automobile traded in, and not on manufacturer's recommended list price. *Miller Chevrolet Company* v. *City of Pittsburgh,* 162 A.2d 351 (Pa., June 30, 1960)

Bonds—Construction of Courthouse—Issuance of Upheld

Action involving validity of bond issue, held that under circumstances there was emergency which authorized county to exceed its constitutional debt limit for purpose of building new courthouse, and that statutory limitation on tax levy to retire bonds was not applicable to courthouse bonds issued because of such emergency. *Rodgers* v. *Crittenden County,* 337 S.W.2d 728 (Ky., Ct. App., Aug. 18, 1960)

Condemnation—Highways—Testimony as to Damages to Separate Tracts Denied

Where farmer initially chose to try his turnpike condemnation case on theory that only one integrated tract of land was affected even though his total acreage had been divided into two tracts by highway allowing no access from the land, held farmer waived whatever rights he had to try the case as one involving damages to separate and distinct portions of entire tract, and trial court correctly refused to present further testimony as to damages to separate tracts. *Lehigh Valley Tr. Co.* v. *Pennsylvania Turnpike Com'n.,* 163 A.2d 86 (Pa., June 29, 1960)

Elections—Mayor Compelled to Call Special Election

Held, alleged fraud would furnish no legitimate basis or valid excuse for mayor's failure to discharge promptly ministerial duty of calling by proclamation special election for purpose of electing councilmen under city manager form of government. *State* v. *Felker,* 336 S.W.2d 419 (Mo., Ct. App., Springfield, June 7, 1960)

Taxation—Property of Social Welfare Camp Exempt

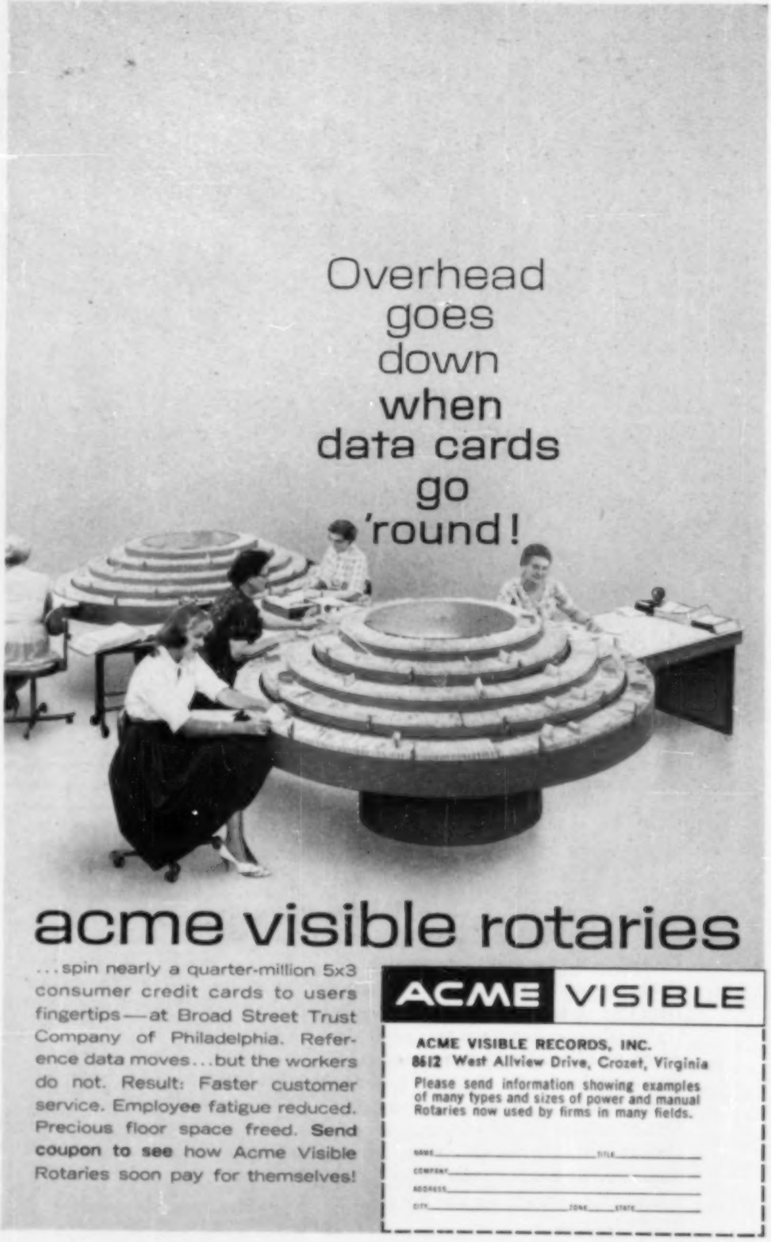
Where corporation maintained camp to provide assistance to campers in their problems and social adjustments, campers were required to be economically underprivileged and were accepted without regard to race, creed or color, and paid only part of costs of their stay, and no employee of corporation received any pecuniary profit other than compensation for services, held corporation's property was exempt from taxation because it was used for carrying out charitable purposes. *Camp Isabella Freedman of Conn.* v. *Town of Canaan,* 162 S.2d 700 (Conn., July 12, 1960)

Teachers—Discharge of—Not Entitled to Wages During Period of Suspension

Where teacher under Teacher Tenure Act was notified of his suspension by school district four days after commencement of contract term and teacher was found guilty of charges after hearing and decision of board was upheld, held teacher was entitled to salary only for four days of contract term preceding receipt of notice of suspension. *Pearson* v. *Board of Education, etc.,* 169 N.E.2d 7 (Ill., App. Ct., 3rd Dist., Sept. 7, 1960)

Tort Liability—Municipal Swimming Pool—City Liable

Action to recover for injuries sustained by plaintiff when he slipped and fell on toilet room floor of municipal swimming pool, held, statute did not abolish common-law distinction between governmental activities and proprietary functions, and that ownership and operation of swimming pool was proprietary function of city. *Weeks* v. *City of Newark,* 162 A.2d 314 (N. J., Super. Ct., App. Div., June 24, 1960)

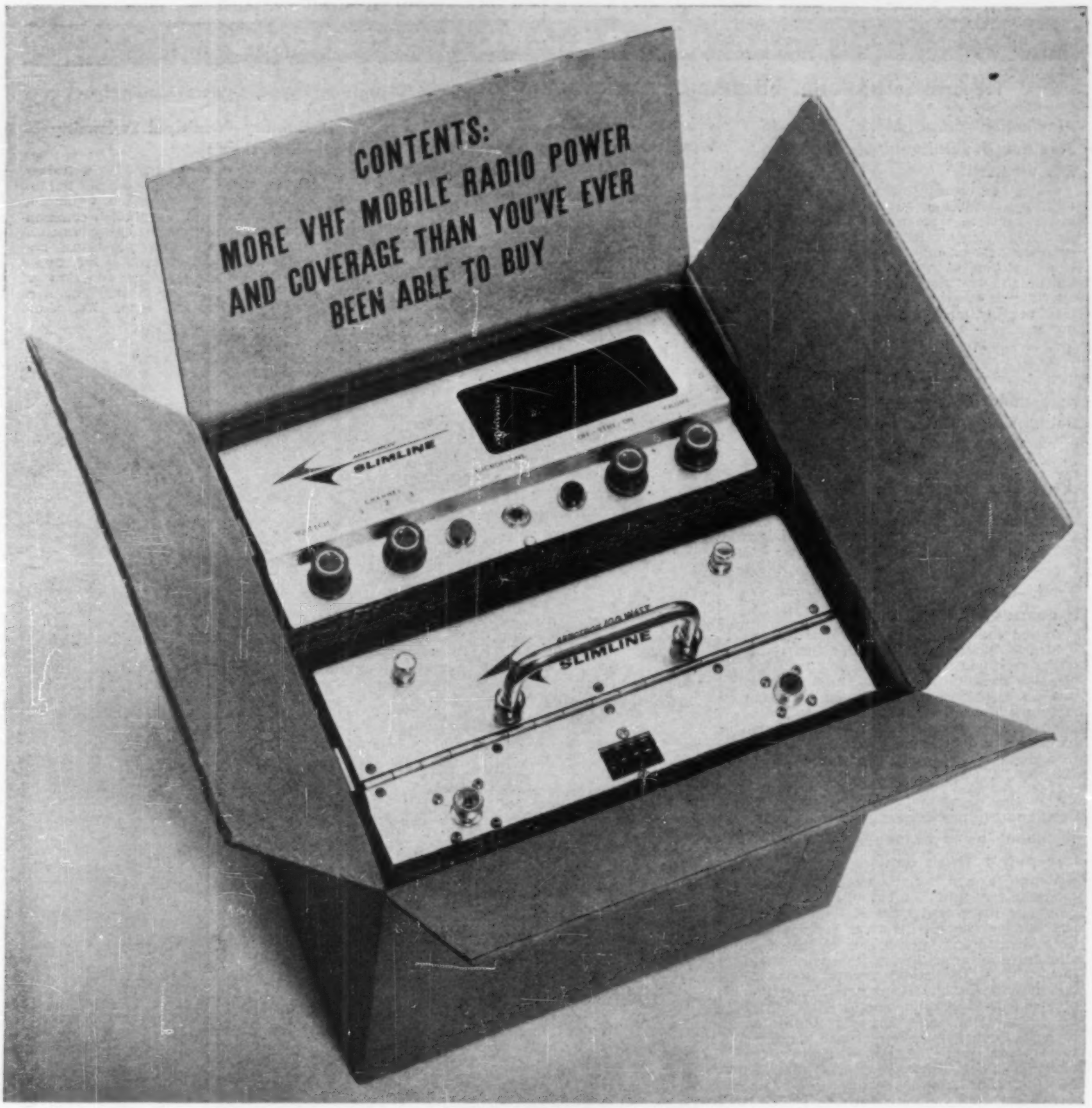


...spin nearly a quarter-million 5x3 consumer credit cards to users fingertips—at Broad Street Trust Company of Philadelphia. Reference data moves...but the workers do not. Result: Faster customer service. Employee fatigue reduced. Precious floor space freed. **Send coupon to see** how Acme Visible Rotaries soon pay for themselves!

ACME VISIBLE RECORDS, INC.
8612 West Allview Drive, Crozet, Virginia

Please send information showing examples of many types and sizes of power and manual Rotaries now used by firms in many fields.

NAME__________ TITLE__________
COMPANY__________
ADDRESS__________
CITY__________ ZONE____ STATE________



aerotron

slimline fm

power package

FACT: The Slimline is the only 100-watt VHF Mobile Radio on the market. PURPOSE: Greater range from car to car—from car to base station . . . full saturation coverage of your entire area without dead spots. The Slimline power package (VHF or low band) is the only system that offers instant selection of normal output for short distance calls and full 100-watt output for long distance calls. ADVANTAGE—Keeps battery drain low. The stand-by power switch further reduces battery drain to less than that required for parking lights.

AERONAUTICAL ELECTRONICS, INC.
BOX 6527 • RALEIGH, N. C.

AEROTRON

IMPORTANT FEATURES: Transistor-powered / Heavy-gauge aluminum construction / Weight: Under-dash unit—8 lbs. 10 oz.; amplifier—13 lbs. 2 oz. / Precision hand-wired circuitry / Boost any 10-30 watt equipment to 100-watt output with amplifier alone. OPTIONAL: 2 or 3 channel operation / Unicall to guard against transmission from stations sharing the same frequency. PRICE: including all standard accessories: VHF—$595; low-band—$615; amplifier only—$250. For complete information, write today. **(VHF: 148-174 MC)**

RECENT CITY MANAGER APPOINTMENTS

W. T. Campbell
Grandville, Mich.

R. G. Sharp
Leesburg, Va.

W. H. Batchelor
Rocky Mount, N. C.

J. C. Robertson
Ferguson, Mo.

S. A. Roos
Albany, Ga.

G. R. Riso
Englewood, N. J.

Lynn Andrews, manager of San Antonio, Texas, has been appointed manager of St. Petersburg, Fla., succeeding George F. Armes. Mr. Andrews was previously assistant city manager of San Antonio.

W. H. Batchelor, formerly assistant engineer and recently planning director, Rocky Mount, N. C., has been appointed manager of that city, succeeding Hugh B. Hines, Jr.

Neal G. Berlin, has been appointed first manager of Highland, Ill. Mr. Berlin was previously administrative assistant at Palatine and Park Forest, Ill.

Billy B. Britt, assistant city manager of Raleigh, N. C., has been appointed manager of Sanford, N. C., succeeding Homer T. Grove.

William T. Campbell, manager of Bronson, Mich., has been appointed manager of Grandville, Mich., succeeding Bernard Passage.

John R. Cook, acting manager of Lexington, Ky., has been appointed manager of that city, succeeding Glenn Lovern.

Jack C. Coss, manager of Louisburg, N. C., has been appointed manager of Washington, N. C., succeeding Robert H. Peck. Mr. Cross was previously assistant to the manager of Raleigh, N. C.

John K. Cottingham, assistant village manager of Hinsdale, Ill., was recently appointed the first city manager of DeKalb, Ill. Mr. Cottingham was previously administrative assistant in Teaneck, N. J.

Q. Pershing DeVore, manager of Yuma, Colo., for the past seven years, has been appointed manager of Longmont, Colo., succeeding Glynn Mills.

B. Harold Farmer, manager of Kissimmee, Fla., has been appointed manager of Valdosta, Ga., succeeding Homer D. Reed. Mr. Farmer was previously administrative assistant at Sarasota, Fla.

W. David Frizzell, representative of the Portland Cement Association, was recently appointed first manager of Union City, Tenn.

Albert L. Field, manager of Friona, Texas, has been appointed manager of Muleshoe, Texas, succeeding Arch M. March. Mr. Field was previously an appraiser for a city and school tax office.

Jay V. Guler has been appointed manager of Commerce, Calif., succeeding Lawrence W. O'Rourke.

Louis A. Maiorana, city controller, has been appointed manager of Roseville, Mich., succeeding Leonard Watchowski. Mr. Maiorana was previously an accountant in private business.

Richard W. Mayo, former manager of Hickory, N. C., has been appointed the first manager of Lake Park, Fla. Mr. Mayo is a retired U. S. Army brigadier general and was previously manager of Gloucester, Mass.

W. D. Frizzell
Union City, Tenn.

A. H. Ramsey
Bedford, Va.

Dirick E. Nedry, administrator of Payette, Idaho, has been appointed city supervisor of Dallas, Ore., succeeding Richard Singleton who died on July 10, 1961.

Bruce K. Potthoff, assistant to the manager at Jackson, Mich., has been appointed manager of Northville, Mich., succeeding John Robertson. Mr. Potthoff was previously assistant to the manager at Plymouth, Mich.

Albert H. Ramsey, clerk-treasurer of Bedford, Va., has been appointed manager of that city, succeeding G. R. House, Jr.

Gerald R. Riso, assistant manager of Scarsdale, N. Y., has been appointed administrator of Englewood, N. J., succeeding Richard L. Black.

John C. Robertson, manager of Northville, Mich., for the past five years, has been appointed manager of Ferguson, Mo., succeeding Ellwood L. Koch. Mr. Robertson was previously on the staff of the Michigan Municipal League.

S. A. Roos, director of public works, Albany, Ga., is now manager of that city, succeeding Carey C. Burnett.

Allen Seibert, a Belleville, Ill., businessman, has been appointed manager of Mascoutah, Ill., succeeding Arthur J. Mulvihill, who died on March 8, 1961.

Robert C. Sharp has been appointed manager of Leesburg, Va. He was previously employed by the Fairfax County Sanitation Department.

Louis J. Smitzes, former manager of Boynton Beach, Fla., has been appointed manager of Delray Beach, Fla., succeeding George Mingle. Mr. Smitzes was previously manager of Rosebud and El Campo, Tex.

Leroy Trafton, manager of LaCrosse, Kan., has been appointed manager of Sylvan Lake, Mich., succeeding Marshall H. Woodburn. Mr. Trafton was previously manager of Sylvan Lake, Mich., and Columbia Heights and Richfield, Minn.

Bradford W. West, Jr., planning director of Oak Park, Ill., has been appointed manager of Bellefonte, Pa., succeeding Dale F. Helsel. Mr. West was previously administrative assistant at Oak Park, Ill.

John E. Workinger, an employee of an engineering firm in Lancaster, Pa., has been appointed the first manager of Millersville, Pa.

Orin F. Nolting
Executive Director
International City Managers' Association

* * *

INSTEAD OF TAKING NOTES

. . . busy, knowledgeable men like to use electronic, portable voice recorders. The late Hugh R. Pomeroy, commissioner of planning, Westchester County, N. Y., carried a portable Dictet weighing only 2¾ pounds to record thoughts fresh in his mind when driving his car, making inspection trips and at other times when note-taking would not be convenient.

CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Dec. 7-8—New York, N. Y.

The Tax Institute. Annual Meeting (Barbizon-Plaza Hotel). Exec. Dir., Mabel Walker, 457 Nassau St., Princeton, N. J.

Dec. 11-14—St. Louis, Mo.

Weed Society of America. Annual Meeting (Sheraton Jefferson Hotel). Bus. Mgr., Walter C. Jacob, Agronomy Dept., University of Illinois, Urbana, Ill.

Jan. 18-19, 1962—New York, N. Y.

New York Sewage and Industrial Wastes Association. Annual Meeting (Park Sheraton Hotel). Exec. Sec., R. C. Sweeney, State Department of Health, 55 Church St., White Plains, N. Y.

Jan. 8-12, 1962—Washington, D. C.

Highway Research Board. Annual Meeting (Sheraton-Park Hotel). Director, Fred Burggraf, 2101 Constitution Ave., Washington, D. C.

Jan. 25-27, 1962—Hollywood, Calif.

California Street and Highway Conference. Annual Meeting (Hollywood-Roosevelt Hotel). Exec. Sec., Bob Glenn, Institute of Transportation and Traffic Engineering, University of California, Berkeley 4, Calif.

Jan. 29-31, 1962—New Orleans, La.

Association of Asphalt Paving Technologists. Annual meeting (St. Charles Hotel). Sec.-Treas., W. K. Parr, Box 619, Ann Arbor, Mich.

***Feb. 2-9, 1962—Corvallis, Ore.**

Northwest Roads and Streets Conference. Annual Meeting (Oregon State University). Sec., B. J. McClarty, U. S. Bureau of Public Roads, 720 S.W. Washington, Portland, Ore.

***Feb. 7-9, 1962—Indianapolis, Ind.**

American Water Works Association. Indiana Section. Annual Meeting (Sheraton Lincoln Hotel). Sec.-Treas., Chester H. Canham, 1330 West Michigan St., Indianapolis 7, Ind.

***Feb. 11-14, 1962—Berkeley, Calif.**

Pacific Southwest Recreation and Park Conference. Annual Meeting (Claremont Hotel). Dir. Field Services, Charles E. Reed, 8 West 8th St., New York 11, N. Y.

***Feb. 13-14, 1962—Chicago, Ill.**

Aquatic Weed Control Society. Annual meeting (LaSalle Hotel). Pub. Chrm. Paul W. Eller, Chipman Chemical Co., Transportation Bldg., 608 South Dearborn St., Chicago 5, Ill.

***Feb. 14-16, 1962—Buffalo, N. Y.**

Association of Towns of the State of New York. Annual Meeting (Statler-Hilton Hotel). Exec. Sec., William K. Sanford, 91 State St., Albany, N. Y.

***Feb. 26-Mar. 1, 1962—Los Angeles, Calif.**

Associated General Contractors of America. Annual Convention (Hotel Biltmore). Exec. Dir., J. D. Marshall, 1957 E. St., N.W. Washington 6, D. C.

Mar. 1-2, 1962—Urbana, Ill.

Illinois Traffic Engineering Conference. Annual meeting (Illini Union Bldg., University of Illinois). Exec. Sec., R. K. Newton, 116D Illini Hall, Champaign, Ill.

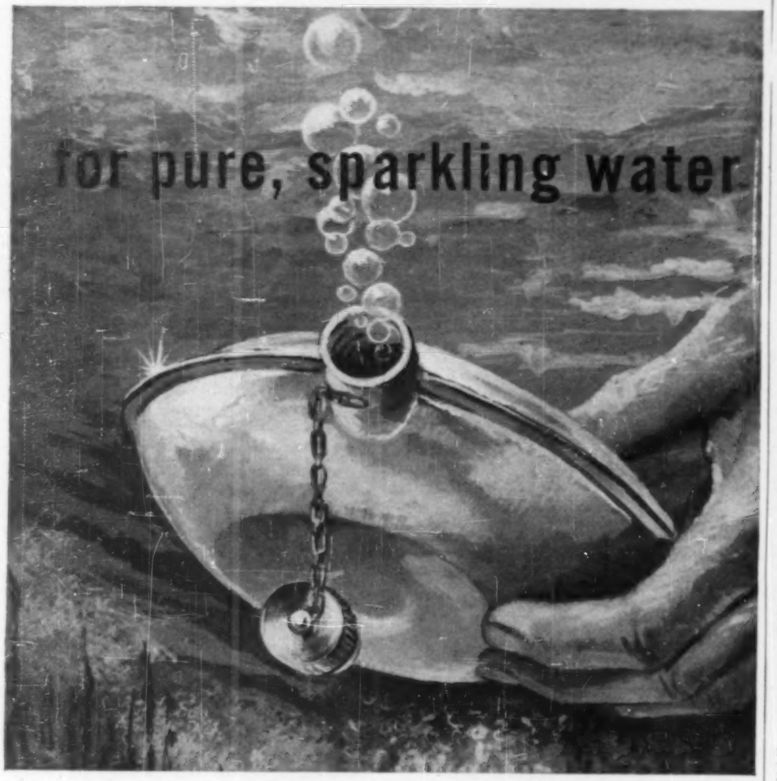
Mar. 4-7, 1962—San Francisco, Calif.

American Road Builders Association. Annual Meeting (Sheridan-Palace Hotel). Exec. V. P., Louis W. Prentiss, 600 World Center Bldg., Washington 6. D. C.

***Mar. 6-9, 1962—San Diego, Calif.**

California Municipal Utilities Association. Annual Meeting (Stardust Motor Hotel). Sec., F. V. Frey, 100 North Garfield Ave., Rm. 108, Pasadena, Calif.

(Continued on page 156)



TRIANGLE BRAND COPPER SULFATE

Small, economical dosages of Triangle Brand Copper Sulfate will make your water supply palatable. It destroys algae and aquatic weeds that cause bad water odors and give water an unsavory taste. ■ Another important use of Triangle Brand Copper Sulfate is for the control of root growths, fungi and slime in sanitary sewers and storm drains without damaging trees and shrubs. ■ Write today for complete information on the use of Triangle Brand Copper Sulfate in water supply systems, sewers and drains.

Phelps Dodge Refining Corporation · Nichols · Triangle Brand · Chemicals · New York

phelps dodge refining corporation

300 PARK AVENUE • NEW YORK 22, NEW YORK

USE YOUR PRESENT EQUIPMENT with *SNO-SCOOP*

the practical - economical - efficient

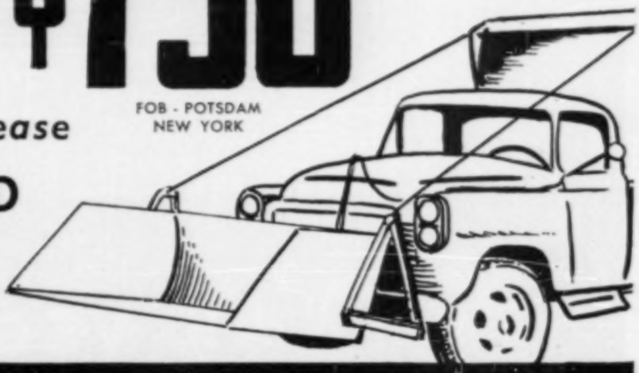
SNOW REMOVAL UNIT

- *FITS ANY TRUCK*
- *Operates from standard dump truck hydraulic lift mechanism*
- *Raises and dumps with ease*

$750

FOB - POTSDAM
NEW YORK

2¼ YARDS PER LOAD



Operated entirely by the truck driver. No other equipment to buy. Fast, efficient, all welded construction.

POTSDAM WELDING & MACHINE CO., INC.
145 MAPLE ST. POTSDAM, N. Y.

Kansas City, Mo. Buys 5 New Pow-R-Stump Cutters . . .

"2,000 STUMPS REMOVED IN 30 DAYS AT A COST FAR BELOW OUR ESTIMATE"

"As we've used a Vermeer Pow-R-Stump Cutter for 5 years, we knew what to expect when we recently ordered 5 new Pow-R-Stump Cutters. The new model is smoother operating and seems to cut faster than our original equipment. We are working the new machines 6 days a week, weather permitting, and have removed approximately 2,000 stumps in the last 30 days. The cost of removal including amortization, overhead, service parts and labor is far below the $5.00 per stump we had estimated."

/s/ *Herbert W. Brackney, Landscape Architect, Kansas City, Missouri*

5 MODELS AVAILABLE TO FIT EVERY STUMP CUTTING NEED

Over 800 cities are now using Vermeer Pow-R-Stump Cutters to rip out ugly stumps . . . in minutes! No back-breaking labor. It's the modern, economical way to remove stumps. Write for complete information, low price and FREE demonstration.

Photo above shows new Model 10 Vermeer Pow-R-Stump Cutters recently purchased by Kansas City, Missouri, Park Commission.

Send complete descriptive literature and prices on the complete line of Vermeer Pow-R-Stump Cutters.

NAME ....
FIRM .... TITLE OR DEPT. ....
ADDRESS .... PHONE ....
CITY .... STATE ....

VERMEER POW-R-LINE PELLA, IOWA

VERMEER MANUFACTURING CO.
1452 W. WASHINGTON • PELLA, IOWA

DANLINE
SWEEPS
THE NATION
A Cleaner City Today
LAS VEGAS
NEVADA
LAS VEGAS

NEWARK

Ah, Las Vegas, noted for fun 24 hours a day, and the wise men who run the city. Kelton E. Bainum, Supt. of Streets and Garage had this to say, "Our first Danline was a "tongue-in-cheek" experiment. So many plastic and synthetic materials had fallen short of expectations. The initial test with the Danline indicated we could realize a 30% reduction in broom costs at the very least. In fact, it is more nearly 50%, and this with much cleaner streets. 2300 to 2500 sweeping miles is common with an occasional 3000 mile life between changes. These mileages result in a 7½¢ to 9¢ broom cost per mile." Your city can also benefit from Danline. We invite your inquiry.

59-52

Leadership Proved Through Performance!

NEWARK BRUSH COMPANY
260 MICHIGAN AVE., KENILWORTH, N. J.

Conventions—When and Where

(Continued from page 154)

***June 10-15, 1962—Washington, D. C.**
INTER-AMERICAN ASSOCIATION OF SANITARY ENGINEERING. Biennial Congress (Willard Hotel). Gen. Chrm., Edmund G. Wagner, Office of Public Health, International Cooperation Admin., Washington 25, D. C.

June 17-22, 1962—Philadelphia, Pa.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Trade and Convention Center). Executive Secretary, Raymond J. Faust, 2 Park Ave., New York 16, N. Y.

***Sept. 23-26, 1962—Chicago, Ill.**
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference (Hotel Edgewater Beach). Exec. Vice Pres., Albert H. Hall, 1001 Connecticut Ave., N.W., Washington 6, D. C.

Sept. 30-Oct. 3, 1962—N. Orleans, La.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Convention. Exec. Dir., Robert D. Bugher, 1313 East 60th St., Chicago 37, Ill.

Sept. 30-Oct. 3, 1962—Boston, Mass.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (The Statler Hilton Hotel). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

Oct. 7-11, 1962—Toronto, Ont., Can.
WATER POLLUTION CONTROL FEDERATION. Annual Convention (Royal York Hotel). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Avenue, N. W., Washington 16, D. C.

Employee-Attitude Survey Gets Results

The personnel department of Abilene, Texas, recently conducted its first employee-attitude survey and reports phenomenal success. The survey, distributed with city paychecks, covered such important aspects as employee morale, training, supervision, pay, benefits, work conditions, suggestion program, grievance procedures and tenure.

The response is considered unusually high inasmuch as 586 replies were received from a total of 793 employees, or a 74% return.

Employee responses were tabulated by use of data-processing equipment. Solicited comments at the close of the form were collected for study by the personnel department and the manager's office. Employees indicated only the department in which they work; individual replies were destroyed following tabulation.

R. M. TINSTMAN
City Manager
Abilene, Texas

MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Culvert Data

DRAINAGE STRUCTURES, DESIGN AND PERFORMANCE, 1960. *Bulletin* 286. *Highway Research Board, National Academy of Sciences, National Research Council,* 2101 *Constitution Ave., Washington* 25, *D. C.* 31*pp.* $1.

This bulletin contains three papers entitled respectively: Laboratory Study of Spur Dikes for Highway Bridge Protection; Culvert Inlet Failures—A Case History; and New Developments for Erosion Control at Culvert Outlets. The inlet failure consisted of bent-up ends on three large structural plate culverts installed with the upstream ends square and projecting to the fill toe. The discussion of excessive erosion at the outlet end of culverts presents new methods of controlling the problem.

Government

URBAN GOVERNMENT—*By Edward C. Banfield. The Free Press of Glencoe,* 60 *Fifth Ave., New York, N. Y.* 1961. 593*pp.* $7.50.

This is a collection of readings on local government, some going far back into history. At least one which we doubt was ever intended to be anything more than entertaining is "How to Get a Political Following," by George Washington Plunkitt. Nevertheless, the serious student of political science will feel rewarded by reading such contributions as the "Reapportionment Myth;" "A Painful Case of Redistricting;" "Styles of Negro Leadership;" "Organized Labor in City Politics," and many others.

We only wish that the editor had identified his contributors. One recognizes many but unfortunately not all. It is good reading, nonetheless.

Sanitary Fill

THE SANITARY FILL METHOD OF REFUSE DISPOSAL, *An* AMERICAN CITY *editorial survey.* THE AMERICAN CITY, *Dept. A* 1261, 470 *Park Ave. South, New York* 16, *N. Y.* 48*pp.* $1 *prepaid.*

Selected articles on the subject of sanitary landfill telling what it is, how it operates, what it costs, performance data and successful operation. Topics discussed include operation of transfer stations, reworking of a sanitary fill and small-town operations. The booklet includes tables presenting useful data supplied by more than 200 cities operating sanitary fills.

Planning

LAND USE AND DEVELOPMENT AT HIGHWAY INTERCHANGES. *Bulletin* 288, *Highway Research Board,* 2101 *Constitution Ave., Washington* 25, *D. C.* 82*pp.* $1.80.

The Highway Research Board frets about what is happening around its expressway interchanges. The study indicates that eminent-domain methods of control over land development in these areas hold significantly more promise than zoning or other police powers.

Red Tape Reduction

PAPERWORK—*By the Bureau of Governmental Research,* 822 *Perdido St., New Orleans, La.* 1961. 25*pp.*

New Orleans gets some recommendations on how to streamline its office procedure and thereby upgrade its efficiency. It is a study made with big-city thoroughness that a lot of little cities will probably find useful.

Metropolitan Adjustment

DECISIONS IN SYRACUSE—*By Roscoe C. Martin, Frank J. Munger & others. Indiana University Press, Bloomington.* 1961. 368*pp.* $6.95.

The authors present this text with the hope that it will offer, "something useful" when a group of municipalities within a metropolitan complex goes about the business of solving inter-community problems. Syracuse, N. Y., departs from the popular conception of the pattern of metropolitan areas which generally appears in the public press—that of a central city dominated by Democrats and ringed by Republican suburbs. This city, except for a few short years, has been Republican both within the city and without even though it has the usual wide spectrum of people of varying national and racial origins.

The "decisions" presented for analysis include Syracuse's bold and stimulating post-war planning program that never materialized because the city insisted on

(Continued on page 158)

WHEN PEOPLE GET MAD AT THE WEATHER

it's good to have professional help to restore public good will

Many communities now employ The Davey Tree Expert Company. So can you. You will get the finest mechanical equipment, always kept in tip-top condition without your bothering with maintenance.

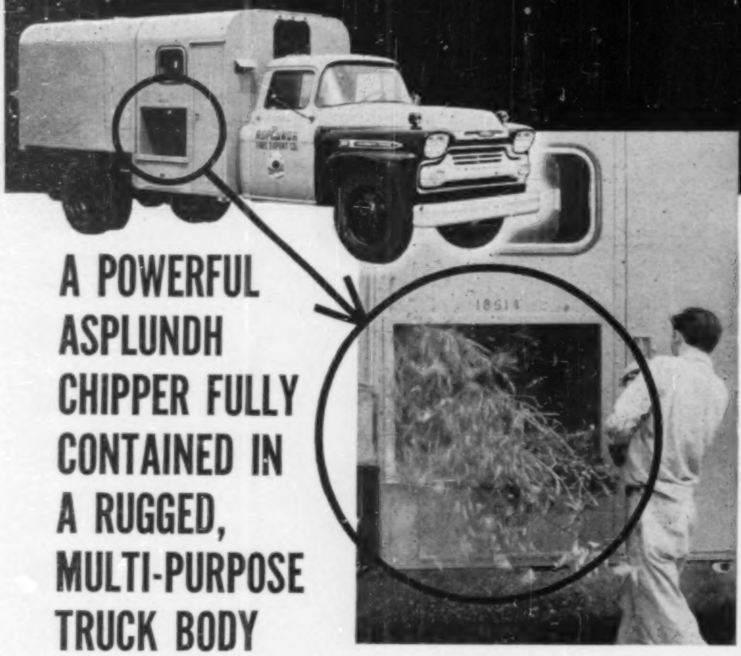
Skilled, courteous manpower, backed by a nationally respected name: Davey offers your community the complete line of tree care services plus expert, experienced control of weeds and brush where needed.

You will also appreciate dealing with the efficiency of the world's largest and oldest tree saving organization—time and temper saving for you.

Write direct to F. F. Lofgren, Sales Manager

DAVEY
TREE EXPERT CO.

DAVEY TREE EXPERT CO.
Kent 16, Ohio
MARTIN L. DAVEY, JR.
President
THE OLDEST AND LARGEST TREE SAVING SERVICE IN THE WORLD



NEW Especially designed for municipal use . . .

A POWERFUL ASPLUNDH CHIPPER FULLY CONTAINED IN A RUGGED, MULTI-PURPOSE TRUCK BODY

Compact, durable, easy and profitable to operate, this completely integrated truck and chipper unit is the most economical answer to municipal brush disposal requirements.

Especially maneuverable in restricted road nets, back alleys and dead-end streets, this new multi-purpose truck unit offers exceptional convenience for all the activities attendant to efficient brush removal. In addition, it is perfectly suited to all types of tree maintenance operation . . . safe, comfortable transportation for personnel and materials.

Fully equipped with a powerful, easy-to-maintain chipper unit (9", 12", 16") and hydraulic dump mechanism, its entire design of operation has been engineered for efficient, trouble-free service by the largest tree company in the world.

As exhibited at American Institute of Park Executives, Phila., Pa. 1959 and the National Shade Tree Conference, Detroit, 1959, along with Asplundh aerial equipment, standard model chippers, and other forestry truck bodies.

ASPLUNDH
CHIPPER COMPANY

For complete information and specifications about any Asplundh equipment, write –

HAMILTON ST., CHALFONT, PA.
MANUFACTURING DIVISION OF
ASPLUNDH TREE EXPERT CO.

BY ACTUAL TEST THE FASTEST CHIPPER MADE

(Continued from page 157)

a pay-as-you-go plan. With the benefit of hindsight one now can see what a tremendously wise investment it would have been if Syracuse had voted bonds at the ridiculously low rates of interest available at that time and had built at the comparatively inexpensive prices of the 1940's. This is not a criticism; rather it is a reminder of the great trouble cities faced during the over-expansion of the 1920's and the depression of the 1930's. The authors analyze several other decisions concerning regional sewerage and water service; health and welfare; education; county reorganization; residential real estate; and industrial parks.

One of the more significant points brought out in the text is that no single person or group dominates the Syracuse metropolitan area to the exclusion of all others. No one shadowy character is the decision-maker. Interestingly enough, Syracuse's city engineer, Nelson Pitts, played a strong decision-making role although he didn't always get his way. Certain consulting engineers also contributed to policy decisions.

Some side observations are also worthy of attention. Expressways attract industry and the New York Throughway does so more than most. Heads of industry like locations near an expressway because of easy access to transportation and the favorable advertising they can get.

Another observation: urban areas grow where there is sufficient water and sewerage capacity. A privately owned water corporation proved unable to meet the needs of a growing area so a publicly owned organization had to take over. A third point: although the pollution of Onondaga Lake has been notorious since 1890, New York State's health authorities, who should have been able to enforce corrective measures, adopted what looked like weak and vascillating policies.

One small disappointment. In the introduction, the authors list the rewards that various groups seek by governmental action. City officials, they say, want employment; city bureaucracies want income and wealth; political parties want government services; non-governmental groups want prestige and power. Apparently the authors feel that in Syracuse no group wants to serve its city unselfishly. We submit that a closer look would disclose many who want to see a better Syracuse brought about through the democratic action of a free people.

Refuse Bibliography

REFUSE COLLECTION AND DISPOSAL; AN ANNOTATED BIBLIOGRAPHY, 1958-1959. *Public Health Bibliography Series No. 4, Supplement D. Offered for sale by Superintendent of Documents, U. S. Government Printing Office, Washington* 25, *D. C.* 73pp. $.45.

A thorough paperbound text that tells you where to get more information on every aspect of refuse collection and disposal—from regulations, through the collection and disposal, to financing. The editors give capsule summaries of each article listed. It is worth thumbing through, if only to learn about the latest in composting and radioactive waste disposal.

Economics

ECONOMIC AREAS OF THE UNITED STATES—*By Donald J. Bogue and Calvin L. Beale. The Free Press of Glencoe,* 60 *Fifth Ave., New York, N. Y.* 1961. 1,162pp. $27.50.

A big, solid book that divides the nation into economic regions and sub-regions. The authors provide statistical data about each area that will be valuable to anyone making a planning study. Occasionally there are complaints that too many city plans don't have economic orientation, particularly when the planners have an architectural background. This book should help correct that weakness.

World-Wide Local Government

The Structure of Local Governments Throughout the World — *By Samuel Humes and Eileen M. Martin. Martinus Nijhoff, The Hague, Netherlands.* 1961. *449pp.*

Probably the best summary of local governments on a world-wide scale currently available. The authors impartially examine all, both inside and outside the well-known Iron Curtain.

Welfare

The Homeless Man on Skid Row—*By the Tenants Relocation Bureau, 320 North Clark St., Chicago 10, Ill.* 1961. *109pp.*

A touching and sensitive report concerning the problem of people who are down and can't get up, and nobody seems to care. About half of these men are either heavy drinkers or alcoholics. The balance are just old and poor, many in bad health. Frequently they are teetotalers. The report recommends corrective measures.

ADMINISTRATION AND GOVERNMENT

Michigan — Municipal and County Home Rule for Michigan, Constitutional Aspects of State-Local Relationships—1, by Arthur W. Bromage. Citizens Research Council of Michigan, 1526 David Stott Building, Detroit 26, Mich. 1961. 28pp. $.25.

New York State—Proceedings of the Local Government Workshop. The Office for Local Government, New York State Executive Department, 155 Washington Ave., Albany 10, N. Y. 1961. 161pp.

Tennessee—Sample Code of Ordinances for Small Cities and Towns in Tennessee, by Don W. Ownby. Municipal Technical Advisory Service, Division of University Extension, The University of Tennessee, Knoxville, Tenn., in cooperation with the Tennessee Municipal League. 1961. 137pp. $3.

Washington — Handbook for Washington Town Officials (Municipalities of the Fourth Class), by John S. Lamb. Bureau of Governmental Research and Services, University of Washington. Distributed by University of Washington Press, Seattle 5, Wash. 1961. 137pp. $2.

FINANCE AND TAXATION

Tennessee — Sanitary Service Charges in Tennessee. Tennessee State Planning Commission, C1-121 Cordell Hull Building, Nashville 3, Tenn. 1961. 61pp. $1.

Wisconsin—Readings on the Wisconsin Assessment Process, Volume I, Fundamentals of the Urban Process. League of Wisconsin Municipalities, 30 East Johnson St., Madison 3, Wis. 1961. 98pp. $5.

NOTEWORTHY ANNUAL REPORTS

Garden City, N. Y.—The Thirtieth Annual Report of the Village of Garden City, New York, 1961. Office of the Mayor, 351 Stewart Ave., Garden City, N. Y. 1961. 4[illegible]pp.

Hawaii—Hawaii Housing Authority 1960 Annual Report. Hawaii Housing Authority, P. O. Box 3046, Honolulu 2, Hawaii. 1961. 24pp.

Hartford, Conn.—City of Hartford Annual Report, Year Ending March 31, 1961. Office of City Manager, Municipal Building, Hartford 3, Conn. 1961. 28pp.

Oakland, Calif.—Annual Report, Street and Engineering Department, for Fiscal Year Ending June 30, 1961. Street and Engineering Department, City Hall, 14th and Washington Sts., Oakland 12, Calif. 1961. 70pp.

Santa Monica, Calif.—Annual Report for the City of Santa Monica, Calif. City Hall, Santa Monica, Calif. 1961. 28pp.

PLANNING, ZONING, HOUSING

Los Angeles County, Calif.—Part Three, The General Plan, Planning for People in North Los Angeles County. Regional Planning Commission of Los Angeles County, Los Angeles, Calif. 1961. 39pp.

Suffolk County, N. Y. — Suffolk County Planning Commission Progress Report, 1960. Suffolk County Planning Commission, Riverhead, N. Y. 1961. 34pp.

PUBLIC SAFETY

Wisconsin—Building and Fire Inspection, Proceedings of the 1961 Building and Fire Inspectors Institute. League of Wisconsin Municipalities, 30 East Johnson St., Madison 3, Wis. 1961. 46pp. $1.

REPRESENTATIVE MUNICIPAL BOND ISSUES
from October 3rd to November 2nd, 1961

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
10/ 3/61	Newport News Va.	3,000	Waterworks	3	6.00	3.51
10/ 4/61	Indianapolis, Ind.	2,500	Street Improvement	14	3.25	3.19
10/ 5/61	Decatur, Ill.	1,485	Street Improvement, Fire Station	10	3.00	3.15
10/ 5/61	New Haven, Conn.	10,228	General Public Improvement	9¾	3.00	2.92
10/ 9/61	Edina, Minn.	2,200	Water, Sanitary Sewer, Street Improvement	3	2.40	3.06
10/ 9/61	Eugene, Ore.	1,000	City Hall	9	2.75	3.14
10/10/61	Asheville, N. C.	4,500	Water	8	6.00	3.96
10/10/61	Griffin, Ga.	1,400	Water, Sewerage	6	4.00	3.65
10/10/61	Knoxville, Tenn.	1,000	Water, revenue	2	5.00	3.50
10/16/61	Dallas, Texas	9,600	Waterworks, Sanitary Sewer, revenue	3	5.00	3.17
10/20/61	Waxahachie, Texas	1,127	Public Building, Sewer System, Street Improvement	4	5.00	3.75
10/23/61	Nashville, Tenn.	6,650	Sewer, Bridge, Hospital Improvement	15	5.00	3.38
10/24/61	Honolulu, Hawaii (City and Cty.)	6,210	Public Improvement	9	5.00	3.64
10/24/61	Lafayette, La.	1,000	Public Improvement	8	5.00	3.77
10/25/61	Jackson, Miss.	3,250	Airport, Waterworks, Public Improvement	9	6.00	3.65
10/25/61	Kansas City, Mo.	6,000	Water, revenue	11	5.00	3.40
10/30/61	Maquoketa, Iowa	1,045	Electric, revenue	12	3.30	3.34
10/31/61	Portland, Ore.	3,500	Water	3	5.00	3.01
11/ 1/61	Silver Bay, Minn.	1,100	Public Improvement	3	2.50	3.24
11/ 2/61	Philadelphia	19,000	Various Purpose	9	4.50	3.31

Compiled from THE WEEKLY BOND BUYER

wherever there's litter...

Litter-Tainer

holds more.. and better!

PUSH
holds up to 1/4 more than comparable units

Cut maintenance with this huge capacity receptacle

More storage, more features in this smartly-designed unit for indoor or outdoor use. Self-closing doors move easily, but DON'T swing in the breeze. Exclusive design ends water seepage, polyvinyl bag speeds emptying. Heavy 22 gauge steel interchangeable side panels, 14 gauge frames, stainless steel adjustable legs. Special colors and silk screened panels available.

2 sizes: 16"x16"x44" • 20"x20"x44"

order through your distributor or write

D·J·ALEXANDER Corp.

2944 E. VENANGO ST. • PHILADELPHIA 34, PA.

USS

K

AMERICAN TELEPHONE & TELEGRAPH CO.
BELL SYSTEM
AND ASSOCIATED COMPANIES

SHELL

UNITED

known by the companies it keeps moving

Thousands of leading American companies keep their investment at a minimum with a 'Jeep' fleet. Great versatility and low initial cost give you the *most* versatile vehicle you can possibly get for your money! Traditionally rugged 'Jeep' construction keeps maintenance costs *low* and the resale value *high*. Get in touch with us today for complete information! **Write to: Robert J. Kreusser, Fleet Sales Manager, Willys Motors, Inc., Toledo 1, Ohio.**

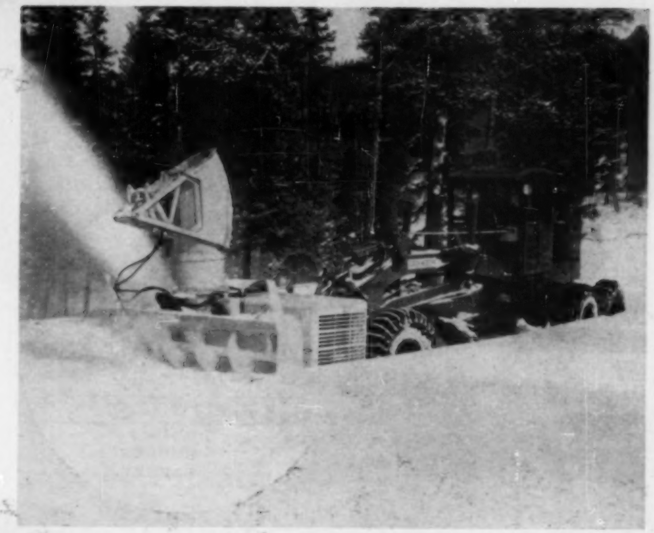
'Jeep' VEHICLES®

PARCEL DELIVERY

'JEEP' FLEETS—FROM THE WORLD'S LARGEST LINE OF 4-WHEEL DRIVE VEHICLES

Willys Motors, Inc., Toledo 1, Ohio. One of the growing Kaiser Industries.

Rotary snow plow attachment for A-W graders



A new Sicard rotary snow plow attachment can be mounted on the front end of any Austin-Western standard all-wheel drive and steer, torque converter machine in the 21,000-pound class and larger and put into use within 30 minutes. Able to move 20 to 25 tons of snow per minute, it operates successfully at elevations as high as 12,000 feet and in snow as deep as 5 feet. Snow can be cast as far as 175 feet. Power source is its own self-contained, 222-hp UD-549 International V-8 gasoline engine.

Control is completely hydraulic, from the operator's cab on the grader. Cutting width of the rotary blade unit is 8½ feet; the casting chute rotates 260°. The impeller casts 30° from the horizontal, right side only.

For additional information on the Model BK rotary snow plow attachment, write ADVERTISING DEPT., AUSTIN-WESTERN CONSTRUCTION EQUIPMENT DIVISION, B-L-H CORP., AURORA, ILL.

Battery-operated caddy cart

The municipal golf course's answer to the golf car appears to be a battery-operated caddy cart that travels 18 holes of play without a re-charge. Operating at a minimum speed of 2 mph and maximum speed of 4 mph, this silent caddy follows any player's natural stride. Fingertip guidance on its single handle is all that's needed.

Both the 110-volt a.c. charger and timer clock are built into the battery box. The 12-volt power supply is enclosed and the electric-drive motor is sealed against dirt. For details, on the 4-wheel, lightweight Caddy Master, write to TORO MFG. CORP., 3042 SNELLING AVE., MINNEAPOLIS 6, MINN.

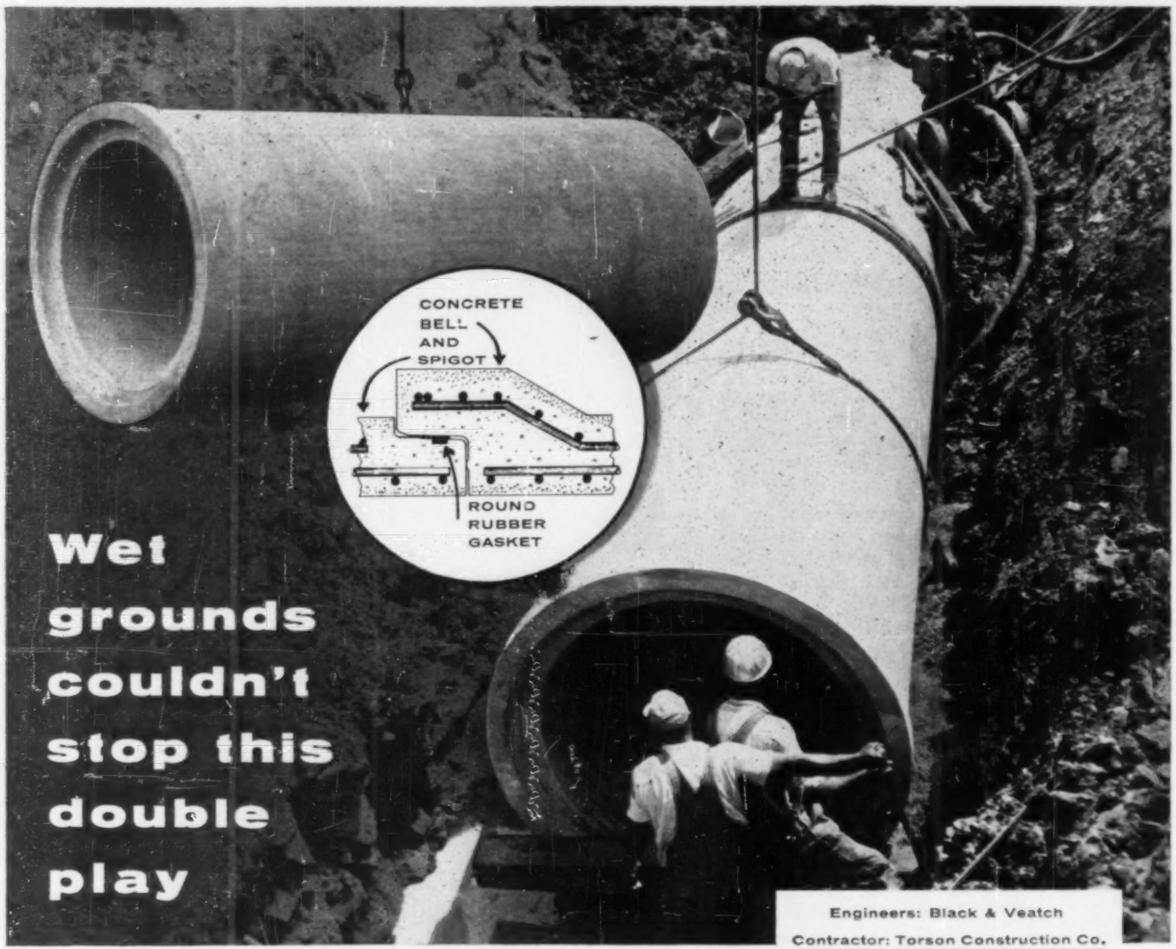
Snow-melting—an old idea with a twist

Snowfall: 57.3 inches. Snow trucking costs: $1.46 per cubic yard, or $7,000,000. Statistics show the winter of 1960-61 to have been both severe and costly for New York City.

Taking its cue from Mother Nature, who melts snow by heat absorbed from the sun's radiation, New York, this year, hopes to reduce the cost of snow hauling by two-thirds over present charges. It expects to do this with a snow-melting machine estimated to be able to remove snow at approximately 50¢-75¢ per cubic yard, and by saving time that it takes for trucks to shuttle between loading points and dump sites, as well as the time

In a demonstration (above) snow is being loaded into the Peabody Snow Melter at an average rate of 100 tons per hour. Melted snow (right) being discharged from hoses.

(Continued on page 163)



Engineers: Black & Veatch
Contractor: Torson Construction Co.

A-M REINFORCED CONCRETE PIPE with CONCRETE and ROUND RUBBER JOINTS

The problem:

Installation of 8,000 ft. of concrete sewer pipe running parallel to a creek and below its water level. The problem was complicated by numerous springs and unstable ground conditions so serious as to allow opening the trench for only one or two lengths of pipe at a time.

The solution:

Long lengths of A-M's 60″ C. & R. R.* pipe reduced the total number of necessary joints. Quick, easy fitting of the joints cut installation time in spite of the problem of poor ground conditions. Tight joints far exceeded the maximum infiltration requirement for this Johnson County, Kansas project.

Write our technical staff for help in solving your problem.

*American-Marietta's Concrete And Round Rubber Joint.

MARTIN MARIETTA CORPORATION

CONCRETE PRODUCTS DIVISION

101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5800

(Continued from page 161)

spent in initial piling and loading.

Essentially, the new snow-melting machine is a huge, mobile hot bath with a built-in furnace mounted on a truck. Snow is loaded into it at the rate of 1½ tons or 10 cubic yards, or about ½ truck load per minute. When the "stopper" is pulled, water runs through two 3-inch diameter, 100-foot long trailing hoses into sewers or catch-basins or, in mild temperature, discharge is directly into the gutters. Drainage rate is established at 300-400 gpm. Truck operating speed is three blocks per hour for a 12-inch snowfall.

The circular hot-water furnace, which is 4½ feet in diameter and 9 feet long, is fueled by kerosene and generates heat up to 3,000°F., 24,000,000 BTU per hour. This high heat is converted into 160° water temperature by circulation through a hot gas heat-recovery system. Hot water is injected into a melting tank where, after the snow melts, water temperature progressively is reduced to 60° bath temperature and 40° discharge temperature. Exhaust gases from the furnace and from a diesel generator will be cleaned and filtered to eliminate air-pollution.

The melting hopper is 7 feet wide, 9 feet long and 7½-feet deep. Melting tank volume is 2,500 gallons. A partly submerged conveyor, 2 feet in width and 4 feet in length, of the flight type removes debris picked up with snow, and deposits it in a special hopper.

When snow is removed via a gang system, a 9-man crew is necessary. The melter will require a five-man crew, not counting two men operating the snow-loader, which will load snow into the melter.

This mobile snow-melting machine is the result of a cooperative effort between the combustion specialists and engineers of Peabody Engineering Corp., 232 Madison Ave., New York, N. Y., and Department of Sanitation of the City of New York.

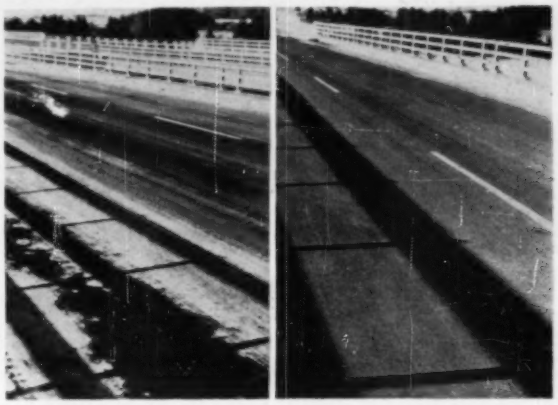
Insulation for Highway Bridges Reduces Premature Icing, Deterioration

Tests indicate that a new type of urethane foam-plastic insulation reduces premature icing on highway bridges that normally become dangerously icy. The insulation is also expected to reduce the rapid deterioration of bridge decks caused by frequent freezing and thawing or by the use of large amounts of de-icing salts.

G. Peter Oldham, vice president of Barrett Division of Allied Chemical Corp., developer of the urethane insulation, in reporting on the outcome of the tests carried out on bridges in Watertown, N. Y. and Clinton, N. J., said:

- **that when snow or freezing rain fell, the insulated lanes remained free from ice about as long as the approach road surfaces built over earth;**
- **that concentration of icing preventives may cause spalling and consequently deteriorate a bridge deck in two or three years, while its approach roads will last five to ten years more before being comparatively damaged;**
- **that temperature readings taken in the concrete bridge decks showed that the insulation moderates the wide swings of temperature which otherwise take place in the concrete, and that this reduction in the rapidity and size of temperature swings in the deck is expected to reduce the cracking and deterioration of the concrete.**

Since an area of urethane bridge insulation one foot square and one inch thick weighs about three ounces, and one inch of urethane has about the same insulating capabilities that two to five feet of earth provide beneath a road surface, the application of urethane does not present a structural problem. The foam is water-proof, and according to Mr. Oldham, tests show no significant chemical or physical change through aging.



Photos taken at the same hour, December 13, 1960, of twin spans at Watertown, N. Y. The bridge at right, carrying southbound lanes of U. S. Interstate Highway 81, has been sprayed with urethane foam insulation. The twin bridge carrying northbound lanes (left) is uninsulated.

The insulation is applied by trained Barrett application personnel, utilizing a specially designed spray gun which mixes two liquid components in its nozzle. The urethane foams up and solidifies in a matter of seconds and can normally be sprayed directly onto concrete or steel without any surface preparations, according to the developer.

For additional information on urethane bridge insulation, write to Barrett Division, Allied Chemical Corp., 40 Rector St., New York 6, N. Y.

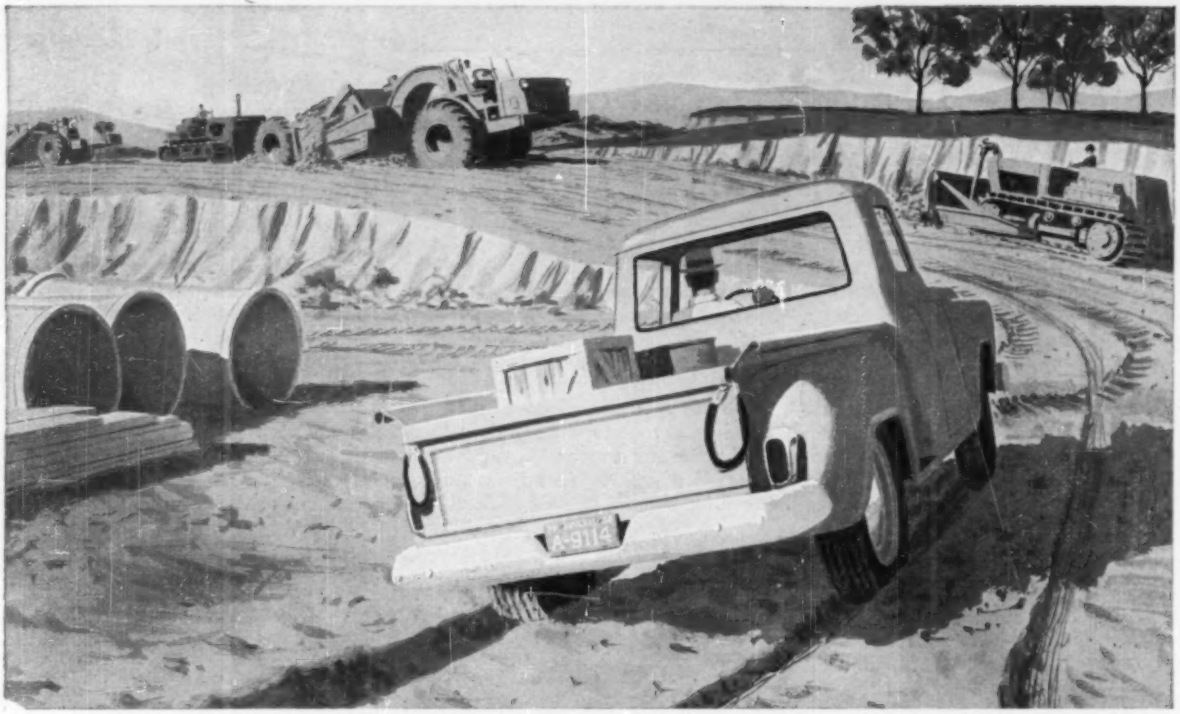
Improved Snorkel-Type Fire Truck

American LaFrance, Elmira, N. Y., announces that the first production model of its new specialized fire truck, the Strato-Chief, which features improved aerial platform equipment, the Snorkel, is on the assembly line.

Strato-Chief is said to provide mobility and flexibility in handling high-pressure, high-volume nozzles for fighting fires. It incorporates conventional pumps, ground ladders, hoses and other components necessary for complete fire fighting. The Snorkel unit, which can be hydraulically rotated 360° and elevated to any desirable height and angle by two articulated arms, doubles as a rescue device for lowering trapped persons. It will be available in either 70- or 90-foot working heights.

Elmer A. Rich, III, president of American LaFrance, said that the Equipment Division of Young Spring and Wire Company, Bowling Green, Ohio, will build the aerial equipment to be installed on the Strato-Chief.

(Continued on page 165)



Limited slip differentials . . . produced by Dana Corporation . . . are pulling new cars and trucks through mud and snow

The year 1961 will see fewer vehicles stuck in the mud—and snow. For almost every manufacturer of cars and light trucks offers the limited slip differential—made by Dana Corporation—as factory installed equipment.

The limited slip differential—produced by Dana Corporation . . .

- stops wheel spinning on ice or slick pavement, if one of the wheels can grip the road.
- enables your car or truck to pull out of sticky mud or loose sand if either wheel has traction.
- guards against dangerous swerves resulting from "wheel hop" on rough, bumpy roads.

Because of its safety and convenience features the new limited slip differential could prove as useful and as popular as the automatic transmission. To men who watch costs—the fleet operators—the limited slip differential is a feature that pays for itself in just one or two days of bad weather. Equipped with limited slip differentials at moderate cost, their fleets can maintain service and stay on schedules in the worst winter snows and the heaviest spring rains.

Next time you buy a car or truck, ask your dealer to demonstrate the advantages of the limited slip differential. Sold under many names—it's manufactured by Dana Corporation.

WRITE Dana for free copy of booklet that describes how and where the limited slip differential works.

DANA
Spicer

DANA CORPORATION
Toledo 1, Ohio

(Continued from page 163)

It has been building the "Snorkel" equipment under the name "Strato-Tower" for commercial market and has made over 400 installations. Four units adapted for fire service have been built for the Chicago, Ill. fire department. Chicago was the first city to develop and use the Snorkel equipment for fire-fighting work. Mr. Rich also reported that engineers of the two companies collaborated on the design of the aerial apparatus, including several advanced technical features which readily adapt the Strato-Chief to the needs of up-to-date fire fighting.

The Strato-Chief can be housed in fire stations with 10-foot door openings. A three-dimensional control installed in the Strato-Chief's basket or platform assures pin point control by operating firemen. The tower provides a mobile reconnaissance point and permits instructions to be relayed quickly to ground fire-fighting crews.

For additional information, write to American LaFrance.

Clinton Offers 35 Industrial Engines

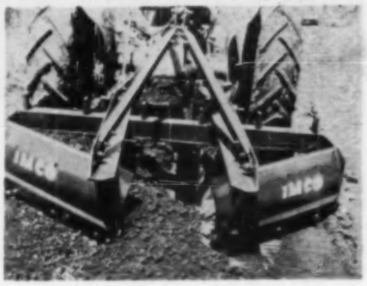
For 1962 Clinton Engines Corp., 250 Park Ave., New York 17, N. Y., will offer industrial original equipment manufacturers 35 air-cooled gasoline engines. One of two new engines carries an industrial rating of 5¼ hp; the other 6¼ hp. Both are provided to meet the requirements of manufacturers of tractors, compressors, pumps and generators. They are offered in two categories: Alumalloy, a copper and zinc-impregnated alloy of aluminum, and Clintalloy, a chromium and nickel-impregnated alloy of cast iron.

Six new models have been added to the Alumalloy line, which also includes six additional engines. All are equipped with integrated cast iron cylinders or sleeves to assure long life.

Twelve of the Clintalloy engines are shell-molded; eleven, sand cast. The sand cast engines are said to be well adapted to continuous duty applications where operational hours accumulate rapidly.

Several engines in both categories are equipped with the new suction-type Mistomatic carburetion system, with separate controls for idle and high power mixture. Most all are equipped with recoil starters and replaceable bearings at flywheel and power take off ends.

If You Can Straddle It You Can Fill It



Independent Mfg. Co., Inc. says that now you can fill a ditch with just one pass of a tractor equipped with an Imco ditch filler attachment and that you can fill any ditch you can safely straddle with a tractor. In addition, the ditch will be properly "V'd" up.

The ditch filler has six heat-treated scarifier shanks, with replaceable H&L points, that break up the dirt and take side drafts. Shanks can be adjusted so they can be used for scarifying only. The two 15-inch high mouldboards are properly curved and pitched to roll the dirt into the trench.

This attachment can also be used for throwing up borders around irrigation plots. Additional information is available from Independent Mfg. Co., Inc., Neodesha, Kans.

Replace Worn Gutter Brooms in Minutes

Worn gutter broom segments can be replaced in just a few minutes with the Uniloy Throwaway steel-wire gutter broom, manufactured by United Engineering Manufacturing Company of Covina, Calif.

Designed to take the place of the standard rewireable metal segments, the Uniloy Throwaway is prewired, ready to slip easily and quickly into place. It saves hours of labor and eliminates the tedious task of removing old wires from the segment. According to the manufacturer, Uniloy Throwaway brush is applicable to most municipal street sweeping machines.

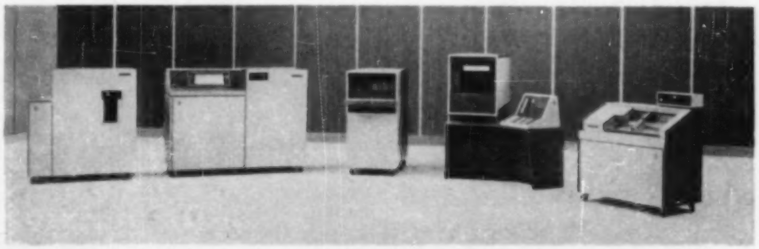
For complete information, write to M. Berkman, Box 248, Covina, Calif.

Small and Medium Scale Data Processing

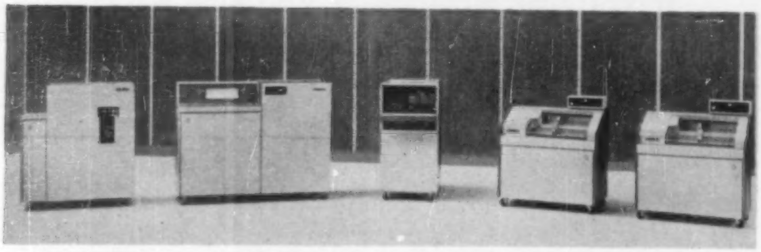
Burroughs Corporation has introduced a new family of four solid-sate computer systems, developed to meet the specific requirements of high-volume, low-investment business data processing applications.

The basic punched card system in the new B200 series is the integrated B260, which has been described by Ray R. Eppert, Burroughs president, as a "workhorse computer" that will increase productivity significantly in medium- and large-scale punched card applications. In addition, there's B280, a magnetic tape system, and the B250, which includes a hard-copy record processor in addition to punched card handling equipment. A fourth system in the series, the B270, was introduced earlier this year, and is particularly suited to financial data processing applications because of its ability to accept documents encoded with magnetic ink as well as punched cards.

(Continued on page 166)



The B250, which uses a record processing unit in addition to punched card handling equipment.



The B260, the basic punched card system in the B200 Series is designed for large volume punched card applications and provides greater productivity than other systems in low priced class.

(Continued from page 165)

The systems are said to be the only ones in their price class that utilizes two high-speed card reading units. This feature doubles "input" speed, and in many applications eliminates much of the time-consuming sorting and rehandling of cards now necessary before they are fed into the system.

A significant contribution to greater productivity is the system's internal "buffering." Because the electronic central processor operates at speeds many times that of the mechanical units, magnetic core "buffers" (temporary data storage devices) were installed to compensate for these differences and balance the flow of information through the system. Buffering, in effect, allows simultaneous, continuous operation of all system components at their true maximum speeds.

Another innovation in lower priced computing systems is the technique employed for feeding punched cards into the system. B200 system card readers pass cards "on demand" of the central processor by using an electronic impulse to trigger a magnetic band, rather than the slower method of engaging a mechanical clutch to move a card into the "read position."

Burroughs has also simplified the costly process of preparing written instructions (the program) for the machine by paring the body of basic computer commands to less than 20 and by making one instruction do what formerly has required three separate instructions.

The B200 series system program library, which consists of the major software available with systems, contains an advanced and powerful report generator that acts with equal facility on routine reports as well as those which are special and nonrecurring. It also performs a complete logical edit of all specifications in addition to printing out error messages, and prevents overlaps, or entry of more than a single item of information in the same position, as well as other possible errors resulting from improper coding, from going undetected.

Other standard programs are available in the program library. A magnetic tape verifier provides reproduction, on a selective basis, of all or part of a tape reel for checking contents both for accuracy and readability.

Two editing programs are supplied: one checks sequence and ac-

SAN DIEGO COUNTY *chose* **STEEL PIPE**

In 1959 the Second San Diego Aqueduct was constructed for the San Diego County Water Authority. This 30 mile line running over hill and dale, required rugged 76 in. and 73 in. welded steel pipe ranging in wall thickness from 3/8 in. up to and including 1-5/32 in. All pipe was in 32 ft. lengths with a spun mortar lining and an exterior mortar coating.

This 30 mile steel pipe line was laid by Young & Anderson Company, Brea, California.

. . . every length was hydrostatically tested in the shop to AWWA standards!

STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

. . . these are inherent qualities of fabricated *steel* pipe. Compare *steel* pipe with other types . . . you'll see why "wherever water flows, steel pipes it best." You can always specify *steel* pipe with confidence.

For your copy of the latest steel pipe brochure, write—

STEEL PLATE FABRICATORS ASSOCIATION
105 West Madison Street • Chicago 2, Illinois

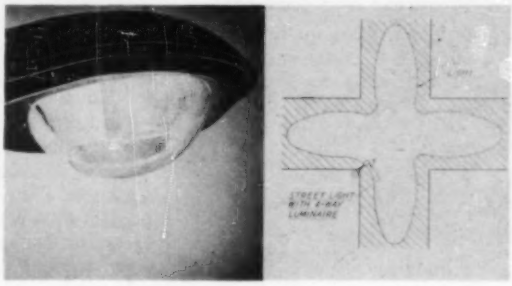
STEEL PLATE FABRICATORS ASSOCIATION FOUNDED 1933

curacy of a complete punched card deck; the other determines the quality and usable footage of a magnetic tape.

The user will find there are three types of routines—a short series of computer instructions that are mated with an existing program—for performing an operation in addition to the primary processing task. One type initiates action to correct errors on magnetic tape which occur in read or write operation; a second provides for memory dump. There are five variations of this memory dump routine. The third, or trace routine for debugging (or discovering errors in a program prior to running it on the computer) is on a step-by-step basis.

Programs for the system are written in symbolic language—a human oriented set of letters and symbols.

The B260 system will lease for $3,750 monthly, sell for $183,659. Sale prices for magnetic tape systems will range from $252,180 to $384,780, with monthly lease rates extending from $5,235 to $8,435. For additional information, write to EQUIPMENT & SYSTEMS DIVISION, BURROUGHS CORPORATION, DETROIT 32, MICH.



The 4-way street lighting luminaire, for use at intersections, directs a cloverleaf pattern of light which covers all four intersecting streets, as shown by drawing at right.

Street Lighting Refractors

Two glass refractors, engineered by Corning Glass Works to place light where it is needed, to deflect from areas where it is unnecessary and to eliminate wasted illumination, have been developed for a pair of new residential street lighting luminaires introduced by the General Electric Co.

The 2-way refractor, for the middle of a block, beams light in opposite directions on the street. The 4-way refractor, for intersections, throws a cloverleaf pattern of light covering four intersecting streets.

Each refractor has unique optical characteristics. The 2-way uses a turning prism which bends light up to 70 degrees. Rounded prisms in the refractor's inside surface concentrate light on highly transmissive outer surface prisms, which then angle the intensified light. The 4-way refractor features a splitting prism, which receives light from the lamp and from the reflector and emits two beams separated by an angle approaching 90 degrees.

Both refractors are made of boro-

(Continued on page 168)

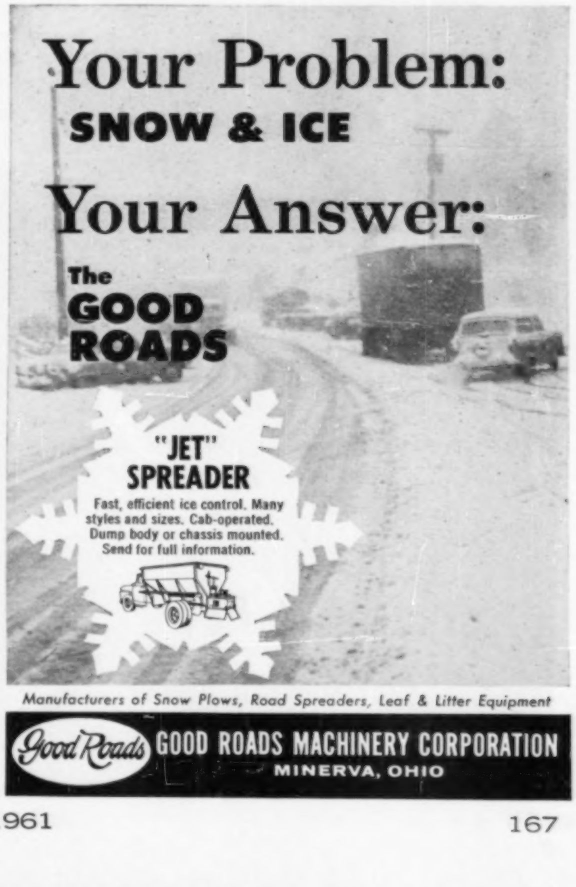
ONE MAN
LIFTS A
TON

...OF GROUNDS CARE EQUIPMENT!

... hauls, unloads, re-loads it, too ... with Trailevator, the amazing hydraulic elevating trailer that lowers to ground level for easy, one-man loading ... *lifts its own load* in seconds! Parks, golf courses, colleges, cemeteries ... if maintaining grounds is your responsibility, find out how you can get more jobs done in less time, *at less cost* ... with Trailevator.

SEND TODAY FOR BULLETIN GC-100! *Trailevator Division, Magline Inc., P.O. Box 412, Pinconning, Michigan*

Trailevator
TAKES THE LIFT OUT OF LOADING


Your Problem:
SNOW & ICE
Your Answer:
The GOOD ROADS

"JET" SPREADER
Fast, efficient ice control. Many styles and sizes. Cab-operated. Dump body or chassis mounted. Send for full information.

Manufacturers of Snow Plows, Road Spreaders, Leaf & Litter Equipment

Good Roads GOOD ROADS MACHINERY CORPORATION
MINERVA, OHIO

(Continued from page 167)

silicate glass, noted for its resistance to weather and temperature change.

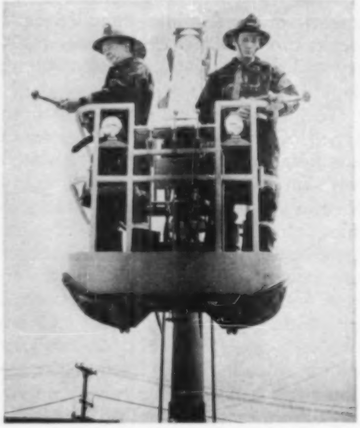
For details, write to Corning Glass Works, Corning, N. Y.

Aerial Platform for Fire Service

The Seagrave-Cemco Eagle is an aerial platform engineered especially for fire service and for installation on Seagrave custom chassis. It is available in heights of 65 feet and 85 feet. (Height is figured from ground level to the bottom of the platform.) The two booms used for elevating the platform are tapered tubing of high-tensile steel. They can be raised to full height and rotated 360° in 60 seconds with a 1000-pound load on platform.

The platform has guard rails from 25 to 43 inches above its floor. Two independent systems of leveling rods keep this platform in level position throughout all operations. Control of all boom movements is accomplished by three levers on the platform. A ground control overrides platform control; all controls are of the "dead-man" type for safety. The ground control also places in position the self-locking outriggers that stabilize the truck and keep it in level position. And it engages the spring lock-outs which prevent chassis spring flexing when the platform is in use. The platform is equipped with a 4-inch water supply line and conduit for electrical and communication systems all within the tapered booms.

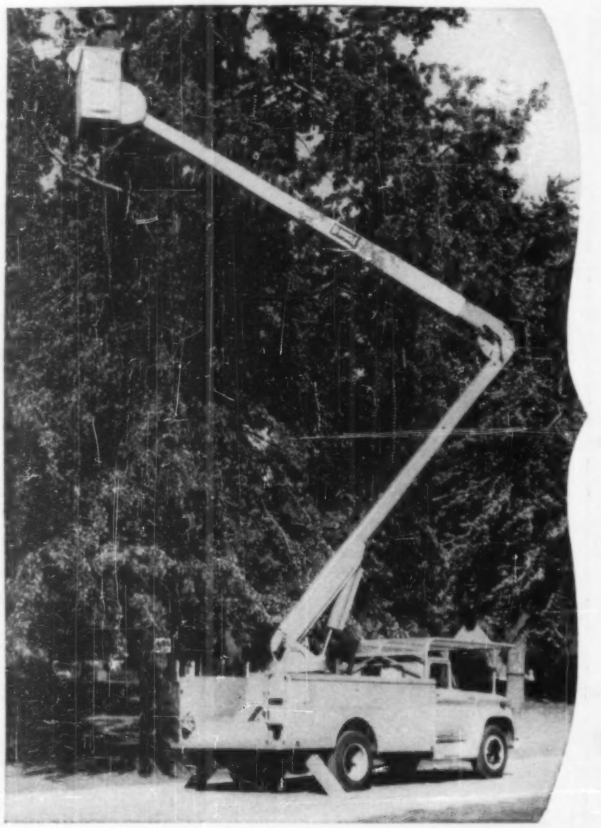
The Eagle was developed and is manufactured by Cemco Industries, Inc., Galion, Ohio. The Seagrave Corporation, Columbus, Ohio, has contracted with Cemco for the exclusive distribution.



Easy Way to Reflectorize Guard Rail Posts

A flexible, vandal-resistant, reflective coil of aluminum, which can be cut to any length and fastened to wood guard rail posts or utility poles to make them highly visible in headlights at night, has been announced by 3M Company.

Essentially, "Scotchlite" brand reflective delineator coil is a continuous 3-inch by 900-inch strip of silver-white reflective sheeting laminated to a coil of .019-inch aluminum. It can be pulled from the dispenser-box and cut to any length with heavy scissors or tin snips. Then it can simply be wrapped around each wood post and nailed or stapled in place. Reflectorization of concrete



Tapered Fiberglas Boom Strong and Rigid as Steel

ON THE

HI-RANGER

BY MOBILE AERIAL TOWERS

Hi-Ranger is the safest most versatile aerial tower you can buy.

The Hi-Ranger's clean, uncluttered design provides total protection of all operating components. Its functional advantages are establishing industry standards.

In addition to a tapered, droop-proof all-fiberglas upper boom, Hi-Ranger gives you a uniquely reinforced, weather resistant, one or two-man fiberglas basket, designed for maximum insulation and service life. A "double" floor provides protection against dangerous moisture accumulation. Where required, additional insulating properties are achieved through special basket liners.

Quiet and powerful hydraulic pruning tools and chain saws are standard accessories. Others are available to give you the best "multiple use" tower.

Four models of popular Series 5TD, illustrated, provide working reach ranges from 48 to 57 feet. Other models from 32 feet up.

HI-RANGER MAKES ONE MAN A WHOLE TEAM!

MOBILE AERIAL TOWERS, INC.

1730 North Harrison Street • Fort Wayne, Indiana

Send now for complete data

pillars or bridge ends can be accomplished with a stainless steel strap clinching ends of the coil.

For additional information, write MINNESOTA MINING AND MANUFACTURING CO., 900 BUSH AVE., ST. PAUL 6, MINN.

Improved Trash Rake for Water Intakes

ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS., recently introduced a trash rake (Type B) with a dual hoisting mechanism that controls tooth action for digging or dislodging debris at any point on the trash racks.

Design is such that when the rake is lowered on the trash racks, the unit's teeth point downward and parallel to the racks. When bottom position is reached, the teeth turn inward toward the trash rack with a digging action until they are perpendicular to the rack bars, thereby providing an effective raking position for a cleaning pass.

Upon reaching the top position above the trash apron and car, the rake teeth are tilted and the debris is dumped.

One of the hoists governs the entire movable portion of the unit; the other positions the teeth. Rake and teeth can be lowered and adjusted simultaneously to provide the teeth with a digging action.

Where heavy, dense or floating debris is encountered in the water intake, the rake can be lowered so that the teeth penetrate the debris and tear it apart. The main hoist then pulls the rake and its load of trash back up.

The trash rake is available in standard sizes from 4 to 12 feet in 2-foot increments or special intermediate sizes.

Unveils Adjustable Trailer

Triumph Machinery Co. announces a 6-ton Safeway ramp trailer, adjustable from 77 inches to 103 inches to fit the tracks of small crawlers and the dual wheels of rubber-tired tractors. Reportedly, this 4-wheel trailer, with brakes on all wheels, and self-blocking, fold-up ramps, reduces loading and unloading time

(Continued on page 170)

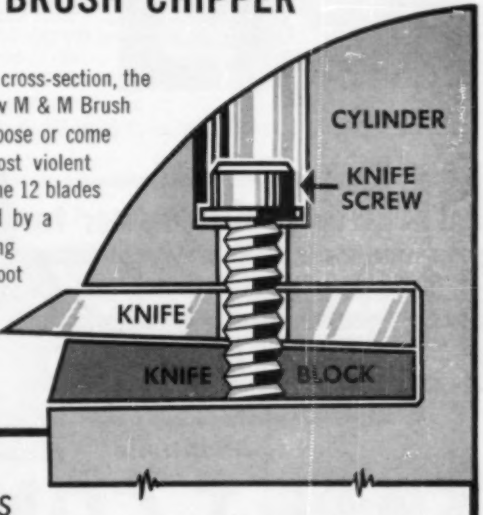
KNIVES CANNOT COME LOOSE

REGARDLESS OF LOAD OR SPEED

IN THE POWERFUL, MONEY-SAVING

M&M BRUSH CHIPPER

By means of their tapered cross-section, the knives in the amazing new M & M Brush Chipper cannot become loose or come out—even during the most violent chipping action. Each of the 12 blades are wedged and are held by a special heat-treated locking screw tightened to 800 foot lbs. torque. This method gives positive locking action, yet allows rapid adjustment.



M&M

BRUSH CHIPPERS

GRIND LIMBS UP TO 8" DIAMETER INTO USEFUL, EASILY TRANSPORTABLE CHIPS

M & M Brush Chippers grind branches and logs up to 8" diameter with ease. Dual stationary cutting bar design allows setting for either large or small chips. Built-in blower, coupled to 3-way position discharge chute, regulates direction and distance of chip flow. These items are standard and are incorporated into M & M design on a permanent basis. Write for complete facts, prices and details about these powerful, money-saving, money-making units that meet every brush-disposal requirement.

115

MITTS & MERRILL • 1003 So. Water Street • SAGINAW, MICHIGAN

BUILDERS OF WORK-SAVING, MONEY-SAVING AND MATERIAL RECLAIMING MACHINERY SINCE 1854

(Continued from page 169)

to two minutes, eliminates planks, blocking, docks, ditches and banks. Inside guide rails add safety to loading and transporting.

Load weight is supported from the ground to trailer axle at center of ramp length, eliminating both shock and strain to drawbar hitch. The Safeway can also carry loader-backhoe combinations. For additional information, write to TRIUMPH MACHINERY CO., WILLOW GROVE ST., HACKETTSTOWN, N. J.

Reaches 2 Million Mark

The world's largest food waste disposer manufacturer, the Waste King Corporation of Los Angeles, Calif., recently marketed its two millionth unit. In commemoration of this milestone, the company presented a symbolic Imperial Hush disposer to one of its earlier customers, F. Morgan (Jack) Brown, shown here with Waste King President Bertram Given.

More than 15 years of development went into the design of the new Imperial Hush model (left). There were less than 100,000 disposers in American homes when Waste King introduced its first Pulverator (right) in 1947; today there are more than 6,200,000.

Fast Way to Compute Refuse Removal Costs

Is your present refuse collection equipment and system efficient, profitable?

Two new cost analysis forms, just issued by Hydro E-Z Pack Division of Hercules Galion Products, Inc., will enable you to compute your operational cost picture in just five minutes. You have only to fill in the blanks provided with such data as body capacity, pickups per load, number of men in crew, chassis information, number of trips and round trip time to dump site, etc.

By following a simple 6-point computation procedure, which is outlined step by step on the form, it will be possible to ascertain such important information as daily labor, truck and maintenance costs; total daily and hourly costs; total weekly cost and cost per individual pickup.

Refuse Removable Cost Analysis Forms E-Z 125 and E-Z 126 can be obtained without cost or obligation from HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO.

HERE is the answer to

EMERGENCY BARRICADES

Lightweight, Easily-Adaptable

SAFE-T-CONE

TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

SAFE-T-CONES are easily adaptable to all situations at a moment's notice. Special construction allows them to be "stacked" in small space.

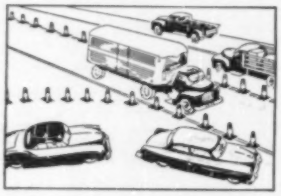
Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

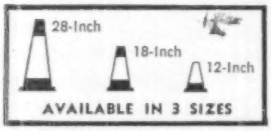
*Poly-Vinyl Chloride

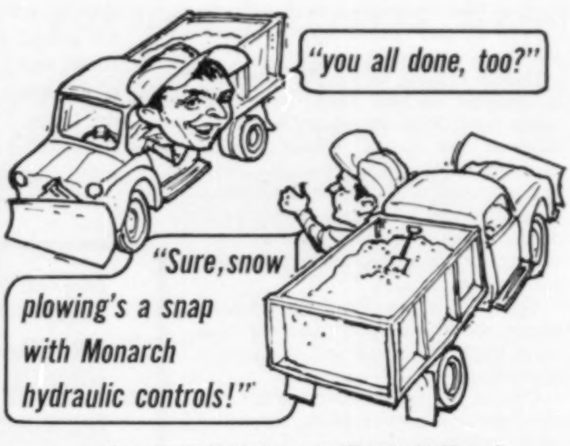
AVAILABLE IN 3 SIZES

For full information write

RADIATOR SPECIALTY CO., CHARLOTTE, N. C.





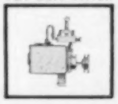

"you all done, too?"
"Sure, snow plowing's a snap with Monarch hydraulic controls!"

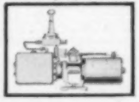
Snow removal is faster, more efficient with Monarch Power Hydraulic Controls on your vehicle. Lift and lower your snow plow right from the cab with a flick of the wrist. Instant up-and-down action . . . automatically! Quick installation. Thousands in use nationwide. See your dealer today. Free folder sent on request.

HY-LO JACK
Fan Belt Driven

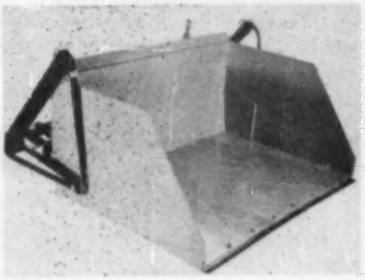
DYNA-MIGHT
Battery-Operated

MONARCH ROAD MACHINERY COMPANY
1363 Michigan St., N.E., Grand Rapids 3, Mich. U.S.A.





Scoops Snow



Low cost, low maintenance and high operating efficiency are said to be major points of the aptly-named Sno-Scoop, which can be mounted on any dump truck equipped with hydraulic hoist body. The unit is operated directly from the driver's seat. Capacity is 2¼ yard stock size. Installation uncomplicated. For detailed information, write to POTSDAM WELDING & MACHINE CO., INC., 145 MAPLE ST., POTSDAM, N. Y.

Resurfacer Provides Tough Film

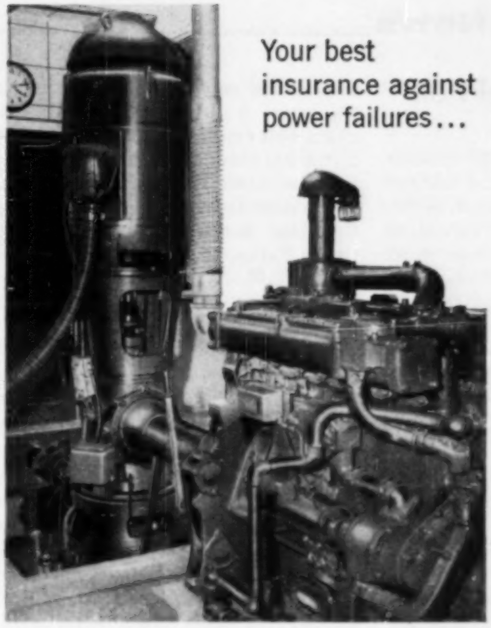
A new heavy-duty resurfacer introduced by American Bitumuls & Asphalt Co., is said to provide a thin, tough, skid-resistant surface able to withstand vehicular traffic. It's recommended for garage decks and for similar applications to bridge over hairline cracks, to smooth-over rough concrete surfaces, and to provide a water barrier preventing seepage and leaching out of soluble salts in concrete structures.

This Laykold product is applied, without heating, by squeegee or troweling. Final smoothing is by metal float.

Complete information may be obtained from AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF.

Pace Gets New Home

New headquarters of the Pace Corporation, Peoria, Ill., are at 3433 W. Farmington Road. The company manufactures a complete line of rubbish, wet garbage, and rubber rendering bodies. A portion of the new building will be for the exclusive manufacture of an all-aluminum body for the industry.



Your best insurance against power failures...

JOHNSON
Right angle
GEAR DRIVES

With the Johnson Combination Drive shown here, either the vertical electric motor or horizontal engine can be used to drive your pump. Engine takes over if power fails; makes continuous supply of water available for domestic, industrial, or fire fighting use. Thousands in use.

Sizes: 15 to 500 hp. for all horizontal prime movers and any vertical shaft pump. Combination, dual, and standard types; hollow or solid shafts. Write now for engineering catalogs.

JOHNSON · MAKERS OF FINE GEARS SINCE 1904
GEAR & MANUFACTURING CO., LTD.
8TH AND PARKER STREETS • BERKELEY 10, CALIFORNIA

MEMBER OF AGMA

East and Gulf Coast representatives:
Smith Meeker Engineering Co., 157 Chambers St., New York City

12-R

For Every Need . . . Every Budget!

MAKE YOUR OWN CHOICE!

There are complete lines of Carpenter Emergency Lights for all basic needs . . . the widest choice of powerful, dependable, durable lights available.

WARNING LIGHTS: Vehicle and stationary types . . . colored, flashing, oscillating, revolving!
HANDLIGHTS: Powerful "Portalites" with the famous extra-wide coverage! Rechargeable or dry battery types.
VEHICLE LIGHTS: Searchlights, floods, colored signal and warning lights for all service and emergency vehicles.
PANIC LIGHTS: Watchmaster "Automatalites" **automatically** guard against light failures. All types including explosion-proof, dust-tight, and remote control.

Carpenter Lights

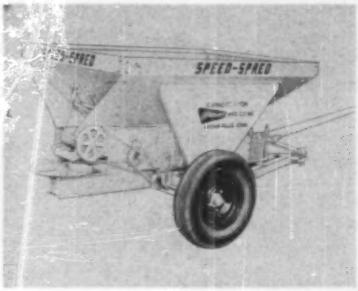
Your Guide to over 100 Emergency Lights . . . the Carpenter Catalog. Write for copy.

CARPENTER MFG. COMPANY
655 Bradley Street, Somerville 45, Mass. Telephone MOnument 6-4300

Spreads Material Full Highway Width

In winter, Speed-Spread spreads sand, cinders, chips, salt and calcium chloride on streets, highways, parking lots, park roads in a spreading pattern that is 36 to 40 feet wide. Pattern may be widened or narrowed by regulating the speed of the 18-inch diameter spreader fan. In warm weather, Speed-Spread may be used to spread fertilizer, lime or weed control chemicals in parks or on golf courses.

The heavy-gauge steel hopper has 1-ton capacity for 60 pound material; when optional 8-inch side extensions are added, capacity is increased to 1½ tons. A 10-inch ground-driven chain belt conveyor moves materials to the spreader fan.



For additional information, write to HARVEY BRANDT, SALES MANAGER, CALHOUN MANUFACTURING CO., INC., CEDAR FALLS, IOWA.

Traffic Flow System

Several Bi-typic systems developed to allow heavy continuous urban vehicular flow with conventional signal equipment and thus cut stop-start city traffic to a minimum have been announced by Traffic-wise Process Co. of New York City. These systems are employable in cities with grid-shaped central business districts and are said to be especially effective in those cities with small blocks, long considered incompatible with suitable traffic control.

According to the developer, heavy progressive 4-way traffic flow is achieved through the use of method, rather than by mere addition of high-cost equipment. In some cities the new processes may provide:

- **up to 400% expansion of existing progressive band lengths;**
- **increased flexibility to meet special needs of problem intersections and roads;**
- **increased time interval for pedestrian crossing;**
- **broadened latitude that allows traffic slowed by weather conditions to keep in the green signal band;**
- **decreased accidents; and**
- **increased commerce within the area.**

Additional information about Bi-typic traffic systems may be obtained by writing to TRAFFIC-WISE PROCESS CO., 520 FIFTH AVE., NEW YORK 36, N. Y.

Optional Attachment for Holan Elbow

An optional earth borer converts the Holan HV Elbow into an all-purpose utility tool, enabling it to bore holes as far as 13½ feet from either side of the truck body. Because the Elbow rotates 360° continuously in either direction, the digger and derrick can be operated behind and on either side of the truck.

Before you buy any storage tank...

take a look at

No matter what your storage problem, a prestressed concrete tank offers many immediate and long term advantages. Minimum maintenance, longest service life, lowest overall cost, 75% of construction cost is spent locally. Modern in engineering and design, proven in service, lowest in cost...prestressed concrete should be considered in any tank planning.

Send for your copy of our new brochure "Prestressed Concrete Tanks."

PRELOAD

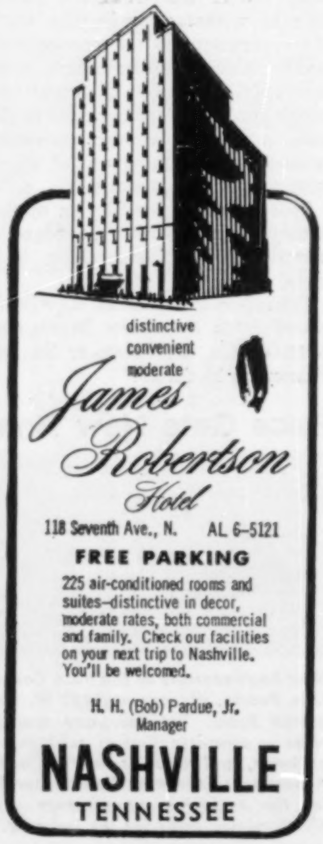
THE PRELOAD COMPANY, INC.
355 Lexington Ave., New York 17, N. Y. • Tel.: MUrray Hill 7-0488
1216 Hartford Bldg., Dallas 1, Texas • Tel.: Riverside 8-4047

PRELOAD CONCRETE STRUCTURES INC.
837 Old Country Rd.
Westbury, L. I., New York

THE CANADA GUNITE COMPANY, LTD.
125 Hymus Blvd.
Pointe Claire, P.O., Canada

HERRICK IRON WORKS
P.O. Box 3037
25450 Clawiter Rd.
Hayward 2, Calif.

PRESTRESSED CONCRETE


distinctive
convenient
moderate

James Robertson Hotel

118 Seventh Ave., N. AL 6-5121

FREE PARKING

225 air-conditioned rooms and suites—distinctive in decor, moderate rates, both commercial and family. Check our facilities on your next trip to Nashville. You'll be welcomed.

H. H. (Bob) Pardue, Jr.
Manager

NASHVILLE
TENNESSEE

Spotting is quick and boring of holes straight.

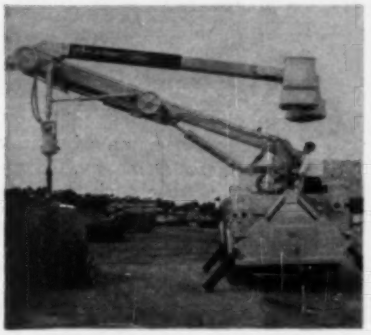
The Elbow has two sets of A frame diagonal outrigger jacks for strength and stability. An aircraft-type cable control system provides positive control of the Elbow for spotting men and equipment in work area.

The attached earth borer moves into storage position along the lower boom by cable retraction. The auger shaft trips a pin in the bracket which automatically locks the digger into storage position.

A specially 6-foot manually-extended sheave head is available for the Elbow-derrick-digger unit. It attaches to the right side of the Elbow arm; the earth borer is mounted on the left side.

Used as a derrick, the Elbow can winch and live boom from 4,000 to 6,000 pounds, at head heights up to 27 feet 10 inches at 8-foot radius, plus an additional 6 feet if extension is used. Operating range for the lower boom when used as a derrick is from horizontal to approximately 70°.

For additional information, write Holan Corp., 4100 W. 150th St., Cleveland 35, Ohio.



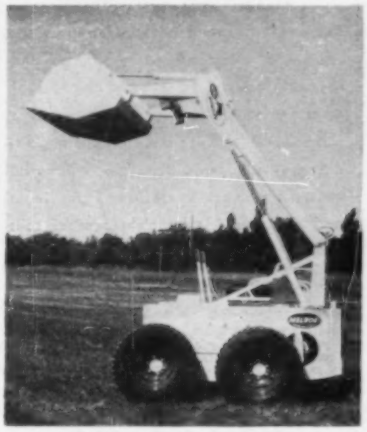
The Holan HV Elbow with the 5400 Earth Borer attached 2 feet from the end of the lower boom.

Small Loader Hustles

A new compact loader that's only 9 feet long, including scoop, turns in its own length, has lift capacity of 1000 pounds, lift height of over 8 feet, and is said to move fast enough to load and dump as much bulk material as loaders twice its size, capacity and price. The "Bobcat" is a development of the Melroe Mfg. Co.

It features four-wheel drive; wheels on left and right sides operate independently of each other. It operates in mud, sand or snow. Construction and operation are simple—no gears to shift and no differential to wear out. Its infinitely variable speed direct drive is permanently lubricated and sealed against dust

(Continued on page 174)



No other filtering medium compares with

ANTHRAFILT
Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is best for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT

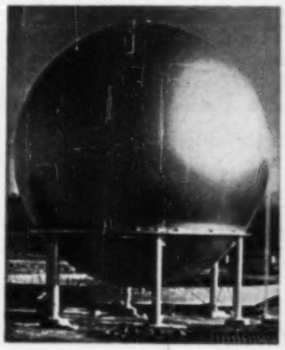
offers important advantages over sand and quartz

DOUBLES length of Filter runs • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P. O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.



GAS HOLDERS

for recovery of sewage gasses

Many municipalities are salvaging sewer gas for fuel, through the use of Cole gas holders similar to the one pictured. Send us your inquiries for tanks of this type—as well as for elevated water storage tanks . . . Take advantage of our 106 years of specialized knowledge and experience in serving America's municipalities and industries and discuss your problems with us. Visitors are always welcome at our plant. Stop by and see us.

Elevated Tanks, Pressure Vessels, Chemical and Processing Equipment from Aluminum, Stainless and Carbon Steel, Monel and Other Alloys.

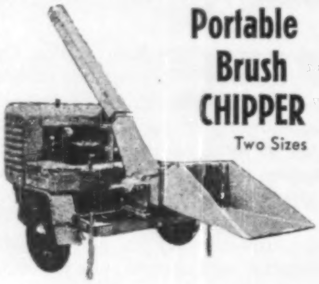
Established 1854

R. D. COLE MANUFACTURING CO.
COLE
NEWNAN, GEORGIA

Manufacturers Since 1885

Portable Brush CHIPPER

Two Sizes



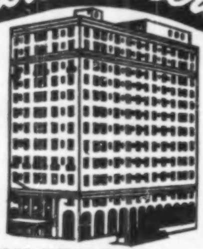
Cut handling and disposal time in half—get extra value

Seasoned or green brush, tree prunings and wood wastes are easily handled and speedily reduced to uniform chips, right on the spot. The pull of the sturdy knife rotor to the chipper throat forcefully discharges the chips through the outlet chute. The chips are useful and profitable and make an ideal mulch, protect soils from erosion, do not pack down and are highly absorbent.

Bulletin SC-3 on request (no obligation)

GRUENDLER CRUSHER and PULVERIZER CO.
Dept. ACM-1261, 2915 N. Market St.
St. Louis 6, Mo., U.S.A.

Hotel Bossert



NEWLY DECORATED
UNDER NEW MANAGEMENT

- One subway stop from Wall St. — 15 min. from Times Square
- 400 Rooms
- 2 & 3 rm. suites, also kitchenettes
- Air-Conditioning
- Television
- Restaurant, Bar & Cocktail Lounge
- Banquet Facilities
- Convenient Parking

Singles from $5.50
Suites from $12.00

MA 4-8100
Montague & Hicks Streets

BROOKLYN HEIGHTS, 1
NEW YORK

APCO SUPER-DeLAVAUD CAST IRON PIPE WITH ALTITE® JOINTS

meets ALL 10 requirements for underground mains

- ✓ Service for centuries
- ✓ Bottle-tight joints
- ✓ Easy tapping and cutting
- ✓ High record of maintained flow efficiency
- ✓ Strength against crushing
- ✓ Strength against impact
- ✓ Beam strength
- ✓ Strength against internal pressure
- ✓ Impervious pipe walls
- ✓ Low installation costs

NO cheap substitute pipe can meet these "musts"

Q

ALABAMA PIPE CO.
A DIVISION OF WOODWARD IRON COMPANY
Phone AD 6-7601, ANNISTON, ALABAMA

We invite your inquiry at any sales office:

CHICAGO: 122 S. Michigan Avenue
NEW YORK: 350 Fifth Avenue
KANSAS CITY: Suite 950, 1006 Grand Ave.
DETROIT: 18505 W. Eight Mile Road
SOUTH GATE, Calif: 5335 Southern Ave.

Atlantic City's Newest Convention Hotel

The Jefferson with its new facilities for handling all convention groups is fast becoming Atlantic City's most popular convention hotel.

The Jefferson features an abundance of Meeting, Banquet and Exhibition Rooms fully equipped to handle your every need. Experienced personnel. Location ideal in heart of Atlantic City.

WRITE ● PHONE ● WIRE TODAY
FOR DESCRIPTIVE LITERATURE

Convention Manager
Hotel Jefferson
Atlantic City, N. J.

Purchasing

(Continued from page 173)

and other contamination. Double-acting lift and tilt cylinders have full hydraulic power.

Scoop buckets of any size or shape are provided to handle specific loads within the loader's rated capacity. Basic loader price includes one scoop bucket of the size and shape best suited to the kind of load to be handled. Other useful attachments are available for municipal use.

For further information, write to MELROE MANUFACTURING CO., GWINNER, N. D.

Purchasing News Briefs

- the corporate name of Vapor Recovery Systems Company, Compton, Calif., has been changed to **Varec, Inc.** Officers and management of the company remain unchanged.

- almost all models and styles of **Westinghouse** mercury-vapor and incandescent roadway lighting equipment have been reduced in price by at least 3% and in many instances as much as 15%.

- **Dresser Industries, Inc.,** Dallas, Texas, has purchased for an undisclosed amount of cash the assets of **M & H Valve and Fittings Company,** Anniston, Ala., subsidiary of the Walworth Co.

- one of the nation's leading manufacturers of highway traffic signs and a major southern producer of metal stamps, National Safety Engineers, Inc., has been purchased for cash by **Vulcan Materials Company,** Birmingham, Ala. The newly acquired property will be operated as part of Vulcan's Birmingham Slag Division under the name of Vulcan Signs and Stampings Division.

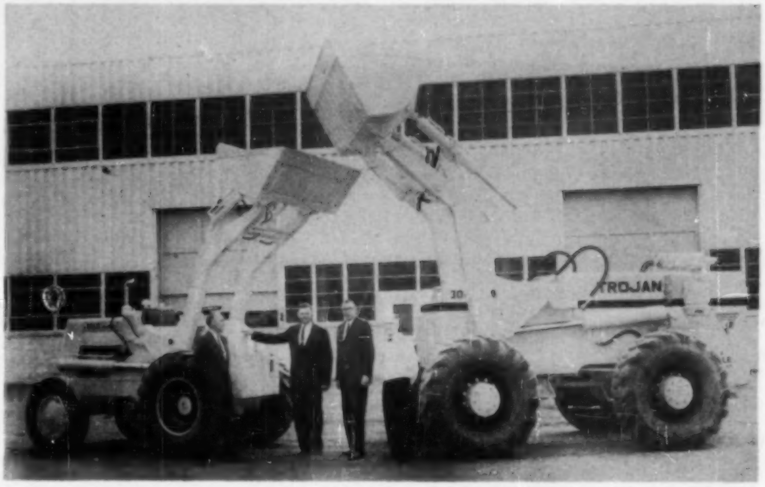
- all **Infilco Inc.** municipal water and sewage treatment operations in the United States and Canada have been consolidated into a newly formed Public Works Department, with G. E. Hauer as manager. Consolidation of the company's industrial operations into one department under the management of H. W. Frazer has also been announced.

- the following sales/engineering representatives have been appointed by **John Wood Company, Air Pollution Control Division,** Florham Park, N. J.: for the State of Michigan—Thomas . Poe, Jr., Birmingham Industrial Associates, Box 12, Birmingham, Mich.; serving northern Texas—T. M. Tobias, Air Quality and Conduction Controls, Inc., Box 8014, Dallas, Texas; serving southern Texas—Chavigny Co., 2200 Welch St., Houston 19, Texas; serving northern California—Norman Sutcliffe Co., 275 Brannan St., San Francisco 7, Calif.

- **Dorr-Oliver Inc.**, Stamford, Conn., has formed Dorcon Inc., a wholly-owned subsidiary, to engage in the design, manufacture, fabrication and field erection of metal tanks, water and chemical storage facilities, and process and reaction vessels. Sales headquarters will be in Pittsburgh, Pa., with Max G. Walker as sales manager.

- establishment of four new sales offices has been announced by **United States Pipe and Foundry Co.**, Birmingham, Ala.—Atlanta, Ga., 273 Buckhead Ave., N. E., with Harry D. Wade as representative; Memphis, Tenn., Room 210 Bel-Mar Bldg., 1254 Lamar Ave., with Ray G. Carter as representative; Lansing, Mich., 521 N. Worthington Ave., with John F. Stadtlander as representative; Fresno, Calif., 311 N. Fulton St., John A. Kubik, representative.

Today Looks at Yesterday



Four members of the engineering team that developed the original Trojan tractor shovel in 1949 and who also helped develop today's Trojan are grouped before the last unit ever built of the recently discontinued line (left) and the present Model 304, representative of Trojan's current 7-model series. The four executives who were with the original Contractor's Machinery Co., now the Trojan Division of Yale & Towne Mfg. Co., are (left to right) Frederick W. Allan, Jr., assistant to general manager; Everett Gillard, manager of manufacturing; Robert G. Allan, general manager; and George Monroe, experimental supervisor.

STREET SIGNS
LONG LASTING
MAINTENANCE FREE
LOW COST
150 Ft. VISIBILITY

THIS NEW DESIGN Cast Aluminum 2 and 4 way street sign has been created by us in answer to the many demands by municipalities for a less expensive, maintenance free, long lasting street sign.
It can save you money on purchase price, erection cost and future replacement.
Signs are sand cast of corrosion resistant prime aluminum, especially treated with new scientific coatings that make them permanently attractive, and impervious to weather, airborne acids, alkalis and other contaminative materials. Comes in choice of satin or Prismo reflectorized letters against colored background. High visibility day or night.

LAKE SHORE MARKERS

Write on letterhead for brochure "AC"—it's free.

"Custom Cast LAKE SHORE MARKERS INC Aluminum Specialists"

654 West 19 St., Box 59, Erie, Pa.
Municipal Markers • Plaques • Cemetery Markers
Building Letters • Golf Course and Playground Markers

TAX EQUALIZATION APPRAISALS

Offering a background of a quarter century of

unduplicated experience producing high quality

appraisals for local Tax Equalization Purposes

THE STANDARD OF EQUALITY IN TAX EQUALIZATION

REVALUATIONS
CLT
APPRAISALS

COLE • LAYER • TRUMBLE COMPANY
11 WEST MONUMENT AVENUE • DAYTON 2, OHIO

BRANCH OFFICES
302 West Ashbridge Street, West Chester, Penna.
208 East Boulevard, Charlotte, North Carolina
415 Congress Street, Portland, Maine
84 Peachtree Street, N.W. Atlanta, Georgia

ABOUT PEOPLE

Patrick L. McManus has been appointed general manager of **Worthington Corporation's** Standard Pump Division at East Orange, N. J. He was formerly director of marketing services at the company's headquarters in Harrison.

H. Bach Nielsen is the new general sales manager of **Nichols Engineering & Research Corp.,** New York, N. Y.

Gale E. Allen, general sales manager of **Highway Equipment Co.,** responsible for sales, parts, service, advertising and sales promotion, has been named executive vice president of the Cedar Rapids, Iowa firm. According to C. H. Jordan, company president, he will be administratively responsible for the entire operation of the company and will continue to carry on many of the duties of general sales manager.

Gale Allen

Chicago Pump, Hydrodynamics Division,, EMC Corporation, has appointed George Ries product manager of pumps and comminution equipment. He will be responsible for coordination of sales and product development.

Lewis J. Burger has been named president of **LeTourneau-Westinghouse Co.,** Peoria, Ill. He succeeds Merle R. Yontz, resigned, who has accepted a position with Caterpillar Tractor Co. Mr. Burger was formerly associated with the General Electric Company in various management capacities prior to assuming his new duties as president of the Peoria company.

Lewis Burger

L. A. DePolis, former vice president, marketing of LeTourneau-Westinghouse, has been named president and a director of **FWD Corporation,** Clintonville, Wis. He succeeds M. E. Ash, who was named chairman of the board and chief executive officer.

Saul Riebman's promotion to assistant sales manager of the **Simplex Valve & Meter Co.,** a division of Pfaudler Permutit Inc., Lancaster, Pa., has been announced by F. E. Gerlitz, Jr., sales manager

Hubert "Hugh" Walker has been named assistant vice president, Fire Apparatus and Supplies, for **American LaFrance,** a division of Sterling Precision Corp. Mr. Walker was formerly manager of sales engineering of FDA.

The election of Dante E. Broggi as treasurer and member of the executive committee of **American Meter Company** has been announced by William G. Hamilton, Jr., company president. He succeeds the late Thomas A. Bracken, Jr. Mr. Broggi is also vice president and a director of the company, manufacturer of control equipment for the gas industry.

Dante Broggi

Robert L. Borchardt was recently appointed national service manager for **Motorola Communications and Electronics, Inc.,** and Robert Peth has been promoted to manager of engineering, Mobile and Portable Communications Products by the company's Communications Division.

Lawrence R. Greenhaus has been appointed vice president, marketing, and a director of **Fischer & Porter Company,** Warminster, Pa., manufacturer of industrial process control instrumentation and laboratory equipment. Mr. Greenhaus joined the F & P organization in 1960 as general manager.

L. Greenhaus

Continental Motors Corp. of Muskegon, Mich., has created in its Distributor Division the new office of Technical Director, General Service, Industrial Transportation, and has named Lester S. Pfost to the position. Mr. Pfost, whose engine experience dates from 1920, joined Continental in 1957 and has worked with sales, service and engineering divisions as technical advisor and sales engineer.

Lester Pfost

Marshall S. Wright, Jr., has been named manager of the new Washington, D. C. office of **Lockwood, Kessler & Bartlett, Inc.,** Syosset, N. Y. engineering consultants, which handle design and supervision of construction on highway, bridge, pipeline and other projects.

John L. Barker has been named general manager and vice president of the Norwalk, Conn.-based **Automatic Signal Division** of Laboratory For Electronics, Inc., Boston, Mass. He succeeds John Wilkins, Jr., retired.

The appointment of Russell L. Gilpin to the position of **sales manager of the** Universal Joint Division of the **Dana Corporation,** Toledo 1, Ohio, has been announced by Charles C. Dybvig, vice president of marketing.

The appointment of Jack Engle as sales promotion manager for **Le Roi Division, Westinghouse Air Brake Co.,** Sidney, Ohio has been announced by Richard H. Koehler, vice president, sales.

As sales development manager for the Koehring Division of **Koehring Company,** Milwaukee, Wis., manufacturer of construction equipment, Philip E. Cunningham will have responsibility for developing and promoting sales of all Koehring Division products, which include crane-excavators, concrete paving and finishing equipment, off-road haulers and Mud-Jacks. Prior to his new appointment, Mr. Cunningham was product sales manager in charge of crane-excavators.

P. Cunningham

New appointments at Henry Pratt Co., Chicago 7, Ill., manufacturer of rubber seated butterfly valves, ball valves, strainers and expansion joints, are those of Robert P. Saar as vice president, manager engineering and Thomas A. Keating as application engineer.

James E. Pitman is the new manager of marketing research and planning for the **General Electric Communication Products Department,** Lynchburg, Va.

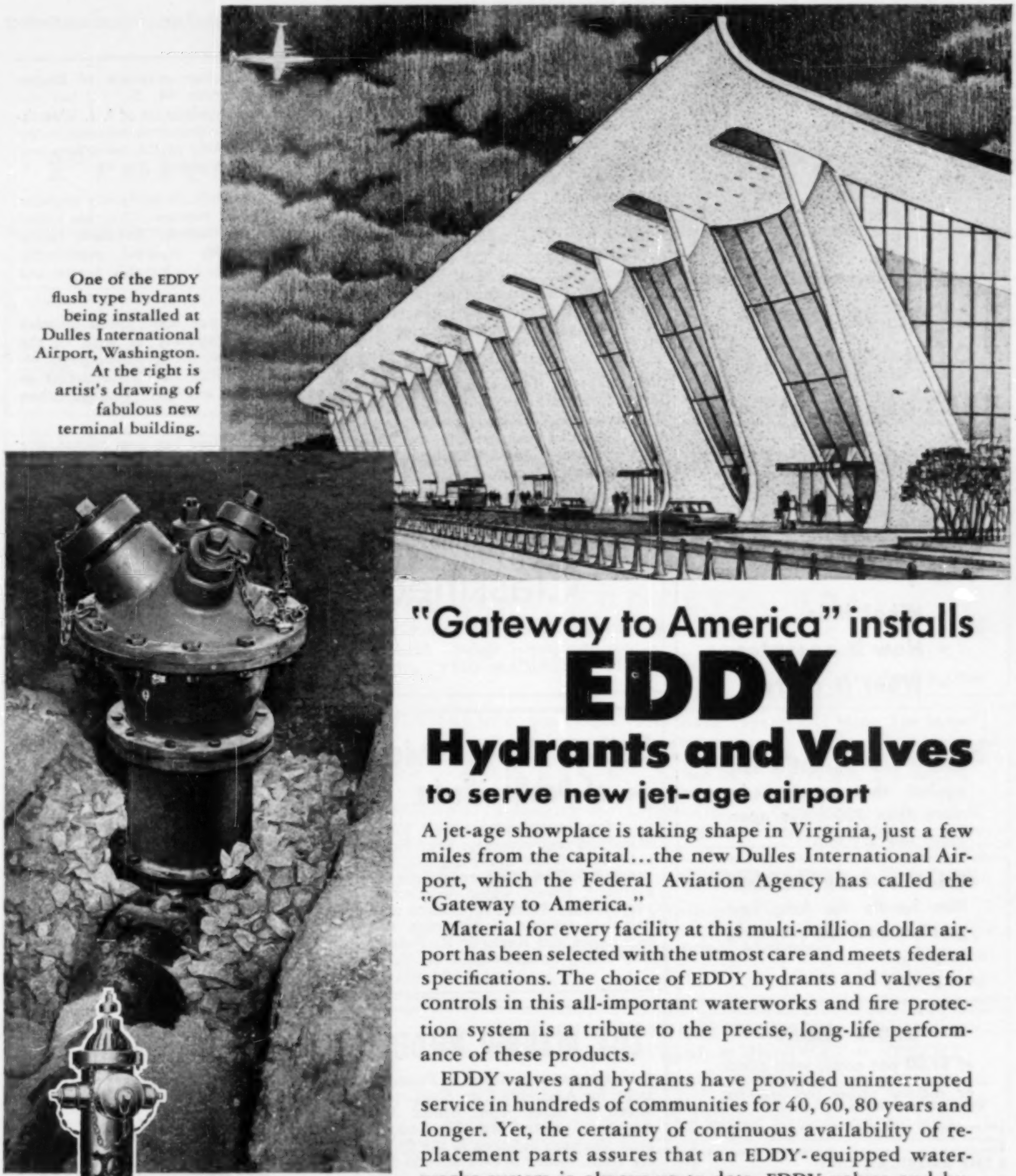
Dr. Rolf Eliassen, Professor of Civil Engineering at Stanford University, was admitted to partnership in the consulting engineering firm of **Metcalf & Eddy.** He will be resident partner in the new Palo Alto, Calif. office.

Charles C. Libby, newly appointed marketing manager of The Ideal Electric and Manufacturing Company of Mansfield, Ohio, will assume full management responsibilities for that company's sales and promotion programs. Mr. Libby was most recently national sales manager of the industrial and electric generator division of Fairbanks, Morse & Co.

Charles Libby

John J. Caton and Thomas B. Donoho have joined **Cast Iron Pipe Research**

(Continued on page 178)



One of the EDDY flush type hydrants being installed at Dulles International Airport, Washington. At the right is artist's drawing of fabulous new terminal building.

"Gateway to America" installs

EDDY

Hydrants and Valves

to serve new jet-age airport

A jet-age showplace is taking shape in Virginia, just a few miles from the capital...the new Dulles International Airport, which the Federal Aviation Agency has called the "Gateway to America."

Material for every facility at this multi-million dollar airport has been selected with the utmost care and meets federal specifications. The choice of EDDY hydrants and valves for controls in this all-important waterworks and fire protection system is a tribute to the precise, long-life performance of these products.

EDDY valves and hydrants have provided uninterrupted service in hundreds of communities for 40, 60, 80 years and longer. Yet, the certainty of continuous availability of replacement parts assures that an EDDY-equipped waterworks system is always up-to-date. EDDY valves and hydrants meet all AWWA standards and are available to fit any existing or planned installation.

***SEND TODAY** for information on the complete line of EDDY Valves, Hydrants and other waterworks specialties*

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.

WATERFORD
NEW YORK

About People

(Continued from page 176)

Association as field representatives. Mr. Caton will headquarter in Phillipsburg, N. J., and will represent the Association in the New England and north Middle Atlantic states. Mr. Donoho, whose headquarters are in Dallas, Texas, will represent the Association in Texas, Oklahoma, Louisiana and Arkansas.

Earle W. Pitt has been named western field sales manager of **The Foxboro Co.,** Foxboro, Mass., Earl M. Kelly, regional manager of the Cleveland territory, and Steve V. Kerstner branch manager of the Los Angeles office, replacing Mr. Pitt.

According to F. A. Jones, vice president in charge of sales, and J. N. Counter, general manager, Commercial Steel Sales, Western Division, Jack Driggs has been appointed manager of Wire Rope Sales for the **Colorado Fuel and Iron Corporation's** Western Division. Howard M. Dorward has been named Product Sales Engineer for the Wire Rope Sales Department.

John G. Hagan, president of **Hagan Industries,** Corona 68, N. Y., has announced the appointment of **J. J. Wuerthner, Jr.,** as vice president-assistant to the president, working in the marketing and public relations area.

Donald J. Hall, formerly city engineer for the City of Newport, Ore., has joined the staff of **Cornell, Howland, Hayes and Merryfield,** regional engineering firm with offices at Corvallis, Seattle and Boise.

Proctor Noyes has joined **Stanley Engineering Company** as head of the Cleveland office. A city planning specialist, he will direct Stanley's activities in the regional and city planning-urban renewal area.

Morris W. Reid has been elected vice president-marketing of **J. I. Case Co.,** Racine, Wis. He will continue to direct the company's overall agricultural and industrial marketing functions for the U. S. and Canada.

Classified Advertising

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. South, New York 16, N. Y.

Asst. to Superintendent of Public Works

. . . for Poughkeepsie, New York. Minimum requirements: Civil Engineer, New York State License, five years field and office experience, in highway, sewer, water distribution engineering. Submit application with complete resume of education and experience to: Kenneth E. Pearce, City Mgr., Poughkeepsie, N. Y.

CITY PLANNER NEEDED

To organize and direct a Planning Dept. for Alhambra City, Calif., pop. 57,000, 7 miles from center Los Angeles, with Manager-Council. Staff has been attached to the Building Dept. Salary is $776-821-868-918-971. Top step is reached in 3 years but hiring may be made on any step depending upon qualifications. Requirements are college graduation in a related field and 3 years of increasingly responsible planning experience. A Masters in planning may replace a year of experience. Apply by Dec. 15. Written exam is tentatively set for Jan. 6 and will be given nationally. Oral appointment interviews are tentatively set for Jan. 26 and 27. Apply Personnel Dept., P.O. Box 351.

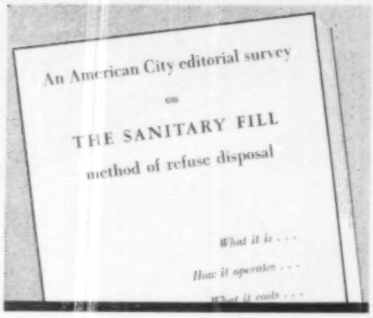
ALHAMBRA, CALIFORNIA

Manufacturers' Representatives Wanted

If you sell products to city Parking or Traffic Departments, we have an atractive proposition on an easy-to-sell item with good repeat business. Territories open east of the Mississippi. Reply to Box 135, The American City, 470 Park Avenue South, New York 16, N. Y.

PUBLIC HEALTH ENGINEER III WANTED

. . . for Maryland—Central State agency. Requires engineering degree, 3 years engineering experience in field applicable to public health programs and 3 years in a related engineering field. Two years of the six must have been in charge of public health engineering projects. (Additional experience may be substituted for college.) Salary: $7800-9750 (maximum in 6 years.) For full particulars, write to: Professional Recruitment, Commissioner of Personnel, 301 W. Preston Street, Baltimore 1, Maryland.



An American City editorial survey

on

THE SANITARY FILL

method of refuse disposal

What it is . . .

How it operates . . .

What it costs . . .

YOUR GUIDE TO BETTER SANITARY FILL OPERATION

This 48-page booklet tells you

- ***What it is***
- ***How it operates***
- ***What it costs***

Check your operating data against that reported by more than 200 cities operating sanitary fills.

Learn how other municipalities handle the long haul problem and fill according to plan.

ORDER TODAY

at $1.00 per copy, send check or money order (no stamps)

THE AMERICAN CITY
Box AC-1261
470 Park Avenue South
New York 16, N. Y.

Please mail .... copies of The Sanitary Fill Booklet

I enclose $...... in payment (postage paid)

Name: ....

Title: ....

Address: ....

The American City
Professional Service Directory

ALBRIGHT & FRIEL INC.
Consulting Engineers
Water, Sewage, Industrial Wastes and Incineration Problems, City Planning, Highways, Bridges and Airports, Dams, Flood Controls, Industrial Buildings, Investigations, Reports, Appraisals and Rates.
Three Penn Center Plaza
Philadelphia 2, Pa.

ALLEN & HOSHALL
Consulting Engineers
Mechanical—Civil—Electrical
Municipal Improvements
65 McCall Place
MEMPHIS, TENNESSEE

ALVORD BURDICK & HOWSON
ENGINEERS
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
20 North Wacker Drive, Chicago 6, Ill.

AURNHAMMER, JESKE & AURNHAMMER
Consulting Engineers
Water Supply & Treatment
Sewerage & Sewage Disposal
Industrial Waste Treatment
Storm Drainage & Flood Control
Municipal Planning & Development
Reports, Plans, Specifications & Construction Supervision
47 River Road — Summit, N. J.

JOHN J. BAFFA
Consulting Engineers
Drainage — Swimming Pools
Sewerage — Water Supply & Treatment
Sewage Treatment — Industrial Wastes
Refuse Disposal — Rate Studies
75 West St. — New York 6, N. Y.

SCOTT BAGBY
ROBERT CATLIN
Modern Comprehensive
City and Area
Planning and Development
"Plans Which Can Be Carried Out"
2 Church St., Rockaway, N. J.
1500 Margaret S.E., Grand Rapids, Mich.

MICHAEL BAKER, JR., INC.
Consulting Engrs., Planners, Surveyors
Airport, Highway & Bridge Design; Water & Sewerage, Municipal Engrg.; Photo Mapping, City Planning, Urban Renewal & Redevelopment; Soils Lab; Complete Survey Service
Home Office: Rochester, Pa., Baker Bldg., Jackson Miss., Northview Dr., Charleston, W. Va., 19 Dunbar St., Harrisburg, Pa., 2799 N. Fourth St.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

ABBOTT & ADAMS INC.
Real Estate Appraisers & Consultants
Urban Renewal — Re-Use Appraisals — Economic Studies
Market Analysis — Marketabilty Programs — Redevelopment Studies
292 Madison Avenue, New York 17, N. Y. — MUrray Hill 6-1900

Abrams Aerial Survey Corporation
Over one-third century of Experience
Complete facilities for all aerial photography, processing, photogrammetric drafting and reproduction.
Planimetric topographic maps and profiles. Large scale atlas sheets. Infra-red for forestry analysis.
606 E. SHIAWASSE STREET — LANSING 1, MICHIGAN

AERIAL SURVEYS, INC.
Maps and Aerial Photographs
For all Planning and Engineering Purposes
4614 Prospect Ave. — Cleveland 3, Ohio

EXPERIENCE COUNTS: Dependable Photo Maps, Topographic Maps, Tax Maps Land Use Inventories
AERO SERVICE CORPORATION
Oldest Flying Corporation in the World • Founded 1919
HEADQUARTERS: 210 E. Courtland St., PHILADELPHIA 20. OFFICES: 1401 S. Detroit St. TULSA; 34 Richard St., SALT LAKE CITY 10; 68 Post St., SAN FRANCISCO

AIR SURVEY CORPORATION
Aerial Photography
Precise Engineering Mapping
1101 LEE HIGHWAY — ARLINGTON 9, VA.

WEED CONTROL PROGRAMS
AQUATIC • TERRESTRIAL • HIGHWAY • STREET
ALLIED BIOLOGICAL CONTROL CORP.
19 Milk Street, Boston 9, Mass. • HAncock 6-7009
Biological Surveys Made of Weed Infested Water Recreation Areas

ALSTER & ASSOCIATES, INC.
ENGINEERS
PHOTOGRAMMETRIC ENGINEERING •
TOPOGRAPHIC & PLANIMETRIC MAPS •
AERIAL MOSAICS • PRECISE FIELD SURVEYS
6135 Kansas Ave., N.E. • TA 9-1167 • Washington 11, D. C.

JACK AMMANN, INC.
Thirty years of experience to serve you!
TOPOGRAPHIC · PLANIMETRIC · PLAN-PROFILE · DIGITAL DATA
AERIAL PHOTOGRAPHY, COLOR · BLACK AND WHITE · MOSAICS
ENGINEERS and SURVEYORS
Broadway at Tenth, San Antonio 5, Texas

AMERICAN AIR SURVEYS, INC.
Aerial Topo Maps • Aerial Photos & Mosaics • Tax Maps
907 PENN AVE., PITTSBURGH 22, PA.
BRANCHES: MANHASSET, N. Y.—ATLANTA, GA.—A NATIONWIDE SERVICE

AMERICAN WASTE DISPOSAL DESIGN & ENGINEERING CO.
"Complete Refuse Disposal Service By Incineration"
Surveys and Reports—Preliminary Designs and Renderings
Construction Drawings and Specifications—Supervision
Air Pollution Control Counsel
59 South Main Street, Winchester, Kentucky
PI 4-3282
5710 East Nevada, Detroit 34, Mich.
FO 6-2812

Municipal Tax Revaluations
Appraisals
ASSOCIATED SURVEYS
Real and Personal Property Tax Maps
29-31 Howe Ave., Passaic, N. J.
311 Bellemeade St., Greensboro, N. C.
124 West Washington, Fort Wayne, Ind.
1105 Nelson Bldg., Charleston, W. Va.

B & B ENGINEERING CORPORATION
FIRE ALARM, TRAFFIC AND PROTECTIVE SIGNALING
MAIN OFFICE, NORWOOD, LOUISIANA
TELEPHONE, WILSON, LA., 46-J

JOHN J. BEHRENDS AND ASSOCIATES
Consulting Engineers
SPECIALIZING IN
TRAFFIC — PARKING — REPORTS — SURVEYS
801 SOUTH BLVD., OAK PARK, ILL.
ST. PETERSBURG, FLA.

BENHAM ENGINEERING COMPANY
and Affiliates
Oklahoma City, Oklahoma
Phoenix, Arizona

BLACK & VEATCH
Consulting Engineers
Water Supply, Water Purification, Electric Lighting, Power Plants, Sewerage, Sewage Disposal, Gas, Valuations, Special Investigations and Reports.
1500 Meadow Lake Parkway
Kansas City 14, Missouri

BROWN ENGINEERING COMPANY
Consulting Engineers
K. P. Building
Des Moines 9, Iowa

BUCHART-HORN (Buchart Engineering)
Consulting Engineers
Airfields—Air Conditioning—Bridges—Community Planning—Dams—Heating
Highways—Industrial Plants—Research & Development
Soils & Foundations—Urban Renewal Projects—Water & Sewers
Home Office: York, Pennsylvania
Lancaster, Johnstown, Pa.—Baltimore, Md.—Washington, D. C.—Santurce, Puerto Rico

BUCK, SEIFERT AND JOST
Consulting Engineers
Water Supply, Sewage Disposal, Hydraulic Developments, Valuations and Reports.
Chemical and Biological Laboratories.
112 East 19th Street
New York 3, N. Y.

BANISTER ENGINEERING CO.
Consulting Engineers
Staffed to completely fill municipal requirements for professional services.
340 North Snelling Ave.
St. Paul 4, Minnesota
Tel. Midway 6-2612

R. L. Banks & Associates
Transportation Consultants
Rapid Transit
Commuter Railroads
Airports & Air Service
1001 15th Street N. W.
Washington 5, D. C.

E. D. BARSTOW
Sanitary Engineer
Water Supply—Water Treatment
Sewerage—Sewage Treatment
Reports—Plans—Construction
163 N. Union St., Akron 4, Ohio

HARLAND BARTHOLOMEW AND ASSOCIATES
City Planners — Civil Engineers
Landscape Architects
317 N. 11th St. St. Louis, Mo.
815-17 Street Washington, D. C.
925 Bethel Street Honolulu, H.
188 Jefferson Ave. Memphis, Tenn.
120 Marietta St. Atlanta, Ga.

HOWARD K. BELL
CONSULTING ENGINEERS, INC.
Water Works Swimming Pools
Industrial Wastes Garbage Disposal
Sewerage Drainage
Valuations — Rates — Reports
Operation Supervision
553 S. Limestone St. Lexington, Ky.

Black, Crow and Eidsness, Inc.
Engineers
Water, Sewerage, Power, Recalcination, Hydrology, Valuation Rate Studies
Gainesville, Fla. Boca Raton, Fla.

CLINTON BOGERT ENGINEERS
Consultants
Ivan L. Bogert Robert A. Lincoln
Charles A. Manganaro William Martin
Water & Sewage Works Incinerators
Drainage Flood Control
Highway and Bridges Airfields
145 East 32nd St., New York 10, N. Y.

Bonham, Kuck, Grant and Brundage
H. E. Bonham Nye Grant
Carl E. Kuck J. M. Brundage
Consulting Engineers
Sewage and Industrial Waste Treatment
Water Supply and Purification
4954-58 N. High St., Columbus 14, O.

LOUIS P. BOOZ
Consulting Engineer
Incineration
Sanitation
Water Treatment
Industrial Wastes
51 E. 42 St., New York 18, N. Y.

Bowe, Albertson & Associates
Engineers
Sewage and Water Works
Industrial Wastes
Refuse Disposal
Valuations
Feasibility Reports
Laboratory Service
75 West Street New York 6, N. Y.

Briley, Wild & Associates
Consulting Engineers
Reports Supervision
Designs Appraisals
Consultations
8. N. Wild Olive Avenue
Daytona Beach, Florida

FLOYD G. BROWNE AND ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Power and Industrial Plants, Industrial Waste, Laboratory Reports, Design. Supervision.
123 W. Church St., Marion, Ohio

CAMP, DRESSER & McKEE
Consulting Engineers
Water Works, Water Treatment, Sewerage, Sewage Treatment, Municipal, Industrial Wastes, Investigations, Reports, Designs, Supervision, Research, Development, Flood Control.
18 Tremont St., Boston 8, Mass.

CANDEUB, FLEISSIG & ASSOCIATES
Consulting Municipal Planners
Community Planning, Urban Renewal Studies, Regional Planning.
32 Green Street, Newark 2, New Jersey

Capitol Engineering Corporation
Consulting Civil Engineers
Dillsburg, Pennsylvania, U.S.A.

THE CHESTER ENGINEERS
Water Supply and Purification
Sewage and Industrial Waste
Treatment—Power Plant—
Incineration—Gas Systems
Valuations—Rates—Management
Laboratory—City Planning
801 Suismon St.
Pittsburgh 12, Pa.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

WILLIAM G. CHRISTY
Consulting Engineer
Air Pollution Control
Combustion Smoke Control
154 E. Main St., Lansdale, Pa.

CLARK, DAILY AND DIETZ
Consulting Engineers
Sewerage, Waterworks, Street Lighting, Highway, Swimming Pools, Surveying and Mapping, Land Development Studies, Bridges, Buildings, Foundations.
211 North Race St. 188 Jefferson St.
Urbana, Illinois Memphis, Tennessee

C. C. COLLINGS & CO., Inc.
Financial Consultants
Specialists in Direct Obligation, Revenue & Municipal Authority Financing
Fidelity-Philadelphia Trust Bldg.
Philadelphia (9), Penna.

Philip Burgess
Chester A. Niple
Ben K. Bare
Clayton C. Bull
B. F. Hatch
Raymond Fuller
Tehlman Krumm
R. E. Peters
Robert Wolfe

BURGESS & NIPLE
CIVIL AND SANITARY ENGINEERS
WATER AND SEWAGE CONSULTANTS
2015 WEST FIFTH AVENUE COLUMBUS 12, OHIO

Design
Construction
Reports
Planning
Valuations
Rates
Supervision
Laboratory

BURGWIN & MARTIN
Consulting Engineers
Surveys, Reports, Design and Supervision
Bridges & Structures, Highways & Streets, Water Supply & Sewage Treatment, Dams, Foundations, Airfield, Traffic & Parking, Community Planning, Telephone Communications
408 W. Seventh St.
Topeka, Kansas
115 E. Armour Blvd.
Kansas City 11, Missouri
728 Delaware St.
Denver 4, Colorado

RALPH H. BURKE, INC.
Complete Consulting Engineering and Architectural Services
Plans Construction Supervision Reports
Expressway Grade Separation Municipal Works
Underground Garages Parking Structures Traffic Studies
Airports and Air Terminals Buildings Parks Field Houses Shore Protection
Swimming Pools Marinas Artificial Ice Rinks
20 North Wacker Drive, Chicago 6, Ill.
506 Higgins Road, Park Ridge, Ill.

BURNS & McDONNELL
ENGINEERS — ARCHITECTS — CONSULTANTS
4600 E. 63rd St. Trafficway
Kansas City 41, Missouri

HOMER L. CHASTAIN & ASSOCIATES
Consulting Engineers
Civil, Structural, Mechanical, Industrial Design & Supervision, Construction, Engineering, Turnpikes, Bridges, Water Supply, Sewerage, Flood Control & Drainage, Material Controls, Municipal Engineering, Topographic Surveys.
155½ WEST MAIN STREET
DECATUR, ILLINOIS

Chicago Aerial Survey
10265 Franklin Ave.
Franklin Park, Ill.
GLadstone 1-0380
A Division of Chicago Aerial Industries, Inc.

Aerial photography since 1923. Complete photogrammetric services for city, county, highway and consulting engineers. Developers of Sonne Strip Photography.

PHOTOGRAMMETRIC ENGINEERS
- Base maps and atlas sheets.
- Precise topographic maps for sewerage studies, construction planning and site location.
- Scaled mosaics and pictorial presentations.
- Highway studies. Street and road maps, Sonne photography.

city planning associates, inc.
URBAN RENEWAL CONSULTANTS
CITY PLANNERS • ARCHITECTS • ENGINEERS • LANDSCAPE ARCHITECTS
708 south main street • MISHAWAKA, INDIANA • BLackburn 9-5281

CLARK AERIAL SURVEY CORP.
Custom Service
Topographic Maps — Mosaics — Reconnaissance
Strips — All Types of Aerial Photography
Frank T. Lodge II, President
3444 Highland Road (M-59) GLenview 3-5430 Pontiac, Michigan

THE J. M. CLEMINSHAW COMPANY
"Our 39th Year"
APPRAISALS — REVALUATIONS
Specializing in the revaluation of Real Estate and Personal Property for local tax equalization purposes. Illustrated brochure on request.
1601 BROOKPARK ROAD, CLEVELAND 9, OHIO

CHAS. W. COLE & SON
Engineers and Architects
3600 E. Jefferson Blvd.
South Bend, Indiana
2112 W. Jefferson St.
Joliet, Illinois.

REVALUATIONS
CLT
APPRAISALS

COLE • LAYER • TRUMBLE CO. / 11 W. MONUMENT AVE. • DAYTON 2, O.

Municipal Tax Revaluations / Illustrated Brochure on Request

CONSOER, TOWNSEND & ASSOCIATES
Consulting Engineers
Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highways and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.
360 EAST GRAND AVENUE   CHICAGO 11, ILLINOIS

DAMON & FOSTER
Consulting Civil Engineers and Surveyors
Water Supply, Sewerage, Sewage Disposal, Surveys, Land Subdivision, City and Town Planning. Reports, Design, Supervision
Sharon Hill   Pennsylvania

DAY & ZIMMERMANN, INC.
CONSULTING ENGINEERS
INCINERATOR PLANTS   POWER PLANTS
VALUATIONS AND APPRAISALS   TRAFFIC AND TRANSIT
NEW YORK   PHILADELPHIA   CHICAGO

DE LEUW, CATHER & COMPANY
Consulting Engineers
Public Transit   Expressways   Urban Renewal   Railroad Facilities   Municipal Works
Traffic & Parking   Grade Separations   Subways   Industrial Plants   Port Development
150 North Wacker Drive, Chicago 6   San Francisco   New York   Boston

---

EDWARDS AND KELCEY
Engineers and Consultants
Traffic — Transportation — Parking — Expressways — Airports — Public Works
Surveys — Reports — Design — Supervision
3 William Street, Newark 2, New Jersey
Boston   Providence   Salt Lake City   New York   Minneapolis

---

ELECTRICAL TESTING LABORATORIES, INC.
Electrical, Electronic, Environmental, Photometric and Chemical
Laboratories, Testing, Research, Inspection and Certification
In-Plant Acceptance and Witness Testing
Wire and Cable—Paper—Street Lighting Fixtures
Checking of Instruments and Apparatus
2 EAST END AVENUE, NEW YORK 21, N. Y.

EMPIRE GAS ENGINEERING CO. • *P. O. Box 1738. Atlanta 1, Georgia*

LP-gas
peak shaving
and stand-by
plants for
- municipalities
- industry
- design
- construction

EWIN ENGINEERING CORPORATION
Engineers — Consultants
Municipal Planning—Highways—Urban Renewal—Public Transit—Sewage Systems—Water Systems—Bridges—Port and Harbor Development
Washington 16, D. C.—5104 MacArthur Boulevard, N. W.
150 Savannah Street, Mobile, Alabama   DuPont Plaza Center, Miami, Florida

---

36 YEARS OF CITY MAPPING EXPERIENCE
FAIRCHILD
AERIAL SURVEYS
Large scale photomaps . . . . detailed topographic mapping . . . automatic cross sectioning . . . planimetric maps . . . for all planning and engineering uses.
Los Angeles: 224 E. 11th Street • New York: 10 Rockefeller Plaza • Boston: New England Survey Service, Inc., 255 Atlantic Ave. • Houston: 5043 Stillbrooke Drive • Washington, D. C.: 1625 I Street N.W.

Crawford, Murphy & Tilly
Consulting Engineers
Water and Sewerage Systems—Sewage and Wastes Treatment—Storm Drainage
Flood Control—Impounding Reservoirs—Swimming Pools
Streets—Highways—Airports
Traffic and Parking Studies
Surveys and Reports
755 South Grand West
Springfield, Ill.

Fay, Spofford & Thorndike, Inc.
Engineers
Airports—Bridges—Express Highways
Port Developments Water Supply
Sewerage and Drainage Systems
Industrial Buildings   Incinerators
11 Beacon St.
Boston 8, Massachusetts

Finkbeiner, Pettis & Strout
Consulting Engineers
Water Supply, Water Treatment, Sewerage, Sewage Treatment, Bridges, Highways & Expressways.
2130 Madison Avenue, Toledo 2, Ohio

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

FRIDY-GAUKER-TRUSCOTT & FRIDY
Architects—Engineers
Water Supply & Treatment, Sewers & Waste Disposal, Incineration, Roads, Airports, Power & Lighting, Schools, Private & Municipal Buildings.
Reports, Plans, Supervision
1321 Arch Street, Philadelphia 7, Pa.

GEE & JENSON
Consulting Engineers, Inc.
Municipal Utilities & Services
Ports & Terminals
Airports & Industrial Planning
Feasibility Reports — Land Planning
Cocoa — Ft. Myers — Dunedin
2019 Okeechobee Road,
West Palm Beach, Florida

GREELEY & HANSEN
Engineers
Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
14 East Jackson Blvd.
Chicago 4, Illinois

Haskins, Sharp & Ordelheide
Consulting Engineers
Water—Sewage & Industrial Wastes—Hydraulics
Reports, Design, Supervision of Construction, Appraisals, Valuations, Rate Studies
1009 Baltimore Ave., Kansas City 5, Mo.

HAVENS AND EMERSON
A. A. Burger   J. W. Avery
F. S. Palocsay   E. S. Ordway
G. H. Abplanalp   A. M. Mock
S. H. Sutton
Frank C. Tolles, Consultant
Water, Sewerage, Garbage, Industrial Water, Valuations—Laboratories
Leader Bldg.   Woolworth Bldg.
Cleveland 14, O.   New York 7, N. Y.

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

HAZEN AND SAWYER
Engineers
Richard Hazen   Alfred W. Sawyer
H. E. Hudson, Jr.
Water and Sewage Works
Industrial Waste Disposal
Drainage and Flood Control
360 Lexington Ave., New York 17, N.Y.

ANGUS D. HENDERSON
Consulting Engineers
Angus D. Henderson, Thomas J. Casey
Water Supply and Sanitation
330 Winthop St., Westbury, N. Y.
210-07 29th Ave., Bayside, N. Y.

Harry Hendon & Associates, Inc.
Engineers
Civil Engineers — Public Utilities
Investigations — Designs
Supervision of Construction
P. O. Box 7404A   925 Sligh Blvd.
Birmingham 13, Ala.   Orlando, Florida

HENNINGSON DURHAM & RICHARDSON
Consulting Engineers since 1917 for more than 700 cities and towns
Water Works, Light and Power, Sewers, Sewage Treatment, Reports, Flood Control, Appraisals, Drainage, Rural Electrification.
3555 Farnam St., Omaha 31, Nebraska

HILL and HILL
Engineers
Sewage and Waste Disposal,
Water Supply and Filtration
Dams, Reservoirs, Tunnels,
Airport and Topographic Survey
Home Office: 8 Gibson Street
North East, Pa.

Grand Junction, Colorado
P. O. Box 1915 - CH 3-1887
Holder Engineering Service
Civil Engineering Consultants
Specializing in Water Supply and Sewage Problems.
Moab, Utah, P. O. Box 562—AL 3-4126
Laramie, Wyoming
P. O. Box 284 - FR 5-6741

"WHO'S WHO"
City Departments can depend upon this directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

H. G. Holzmacher & Associates
Consulting Engineers
R. G. Holzmacher   S. C. McLendon
Municipal Engineering
Water Supply & Treatment
Sewerage & Treatment
Water Analysis Laboratory
500 Broad Hollow Rd., Melville, N. Y.
66 West Marie St., Hicksville, N. Y.

C. H. HOPER & COMPANY
Utilities Engineers
Electric—Gas—Water—Sewer
Rates ● Financial and Economic Analyses ● Planning ● Feasibility Reports ● Valuations ● Organization and Management Studies
818 Seventeenth St.   Denver 2, Colo.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

FIRE RESEARCH ASSOCIATES, INC.
Fire Consulting Service
RESEARCH — RECOMMENDATIONS — SURVEYS
Relating to Fire Administration; Engineering
Public and Private
Blaine-Walker Bldg., 9616 Culver Blvd., Culver City, Calif.

F B&D
Ford, Bacon & Davis
Design   **Engineers**   *Reports*
Construction   *Valuation*
New York • Chicago • San Francisco • Monroe, La.

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Engineers
Dams, Water Works, Sewage, Industrial Wastes and Garbage Disposal, Highways, Bridges and Airports
Traffic & Parking—Appraisals, Investigations and Reports.
HARRISBURG, PENN.
Branch Offices
Pittsburgh, Pa.   Daytona Beach, Florida   Philadelphia, Pa.

GIBBS & HILLS, INC.
Industrial Wastes
Water & Sewage Works
Hydraulic Developments
Electric Transmission & Distribution Systems
Conventional & Nuclear Power Generation
Power Surveys & Contracts
Airports
Rapid Transit
Highways & Bridges
Pennsylvania Station, New York 1, N. Y.

GAI
FOUNDED 1906
GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
Water Supply and Purification
Sewage   Industrial Waste
Chemical Laboratory
New York   READING, PA.   Washington

HOWARD R. GREEN COMPANY   ***Established 1913***
Consulting Engineers
Municipal and Industrial Water Supply and Treatment; Sewerage and Disposal
Airports, Paving, Bridges, Industrial Structures
GREEN ENGINEERING BUILDING, CEDAR RAPIDS, IOWA

Charles W. Greengard Associates
consulting engineers
CHARLES W. GREENGARD ASSOCIATES
CIVIL • SANITARY • MUNICIPAL • UTILITY
Reports — Plans — Supervision — Appraisals
DEERFIELD   ILLINOIS

GRIFFENHAGEN-KROEGER, INC.
Consultants in Public Management
Experienced in City Organization and Methods—Finance—Personnel Practices—Departmental Policies and Practices—Automatic Data Processing—Complete Personnel Testing Services
64 Pine Street
San Francisco
Other Offices: Los Angeles   New York   Washington, D. C.   Chicago   Philadelphia

L. B. GRIFFITH
Consulting Engineer
Research, Reports and Designs on Sewage and Industrial Waste Treatment.
450 West Broad St.   Falls Church, Va.

Hardesty & Hanover
Consulting Engineers
Bridges — Long Spans of All Types — Movable — Lift, Bascule and Swing — Hanover Skew Bascule — Steel and Concrete Spans — Grade Crossing Eliminations
Expressways and Thruways — Other Structures — Foundations — Supervision, Reports, Appraisals
101 Park Avenue   New York 17, N. Y.

FREDERIC R. HARRIS, INC.

Consulting Engineers

Economic Reports, Feasibility Studies, Design, Supervision of Construction, Waterfront and Harbor Improvements—Water Supply—Sanitary and Industrial Waste Disposal—Highways Foundations—Soil Mechanics

144 East 44th Street
New York 17, N. Y.

1915 Tulane Avenue
New Orleans, Louisiana

HARRIS, HENRY and POTTER, INC.

Engineers and Architects

Water Supply, Sewerage Systems, Flood Control, Bridges, Highways, Airports, Traffic, Foundations, Buildings, Reports, Investigations, Consultations

Chester, Pa. **Buckingham, Pa.**

HARZA ENGINEERING COMPANY

Consulting Engineers

Hydroelectric Plants and Dams
Transmission Lines
Flood Control, Irrigations
River Basin Development

400 W. Madison Street **Chicago 6, Ill.**

GAS

HEATH
Survey Consultants, Inc.
Zero Laurel Ave., Wellesley Hills 81, Mass.

LEAKAGE DETECTION SURVEYS

- **Reduced "Unaccounted for."**
- **Safer distribution systems.**
- **Improved earnings.**
- **3rd party audit.**

HEMCO ENGINEERS

Sewerage & Wastes
Natural Gas
Municipal Services

Designers & Consultants

FALLS BUILDING MEMPHIS

Water Supply
Foundations
Bridges & Structures

HOWARD, NEEDLES, TAMMEM & BERGENDOFF

Consulting Engineers

Bridges, Structures, Foundations, Express Highways, Administrative Services

1805 Grand Avenue
Kansas City 8, Mo.

99 Church Street
New York 7, N. Y.

HUNNICUTT & ASSOCIATES

433 FOURTH ST., NO.
ST. PETERSBURG, FLA.

COUNTY and MUNICIPAL

REVALUATION
ASSESSMENT MAPS
CONSULTANT SERVICE

OVER 30 YEARS' EXPERIENCE

Brochure on request

MARK HURD AERIAL SURVEYS, INC.

Aerial Photography
Tax Maps
Topographic and Planimetric Maps

345 Pennsylvania Avenue South **Minneapolis 26, Minnesota**

WILLIAM T. INGRAM

Consulting Engineer

Water
Sewage
Refuse

Sanitary and Public Health Engineering
Planning—Design—Research

Industrial Wastes
Air Pollution Control
Industrial Health

Offices:
East Coast
20 Point Crescent, Whitestone 57, N. Y.

West Coast
90 Panoramic Way, Walnut Creek, Calif.

International
AERIAL MAPPING COMPANY
127 AIRPORT BLVD ★ SAN ANTONIO 9, TEXAS
TAYLOR 6-8681

PRESENTS A MUNICIPAL PROGRAM
OF
AERIAL PHOTOGRAPHY-PHOTO ATLAS SHEETS
MOSAICS AND TOPOGRAPHIC MAPS
WRITE FOR FREE COPY

HORNER & SHIFRIN

Consulting Engineers

E. E. Bloss **V. C. Lischer**

Airports, Sewerage & Drainage, Hydrology, Sewage Treatment, Industrial Waste Treatment, Water Supply & Treatment, Paving, Structures, Industry Engineering Services

1221 Locust Street **St. Louis 3, Mo.**

Harold Hoskins & Associates

Consulting Engineers

Sewers and Sewage Treatment
Paving Water Supply Drainage
Bridges Airports Reports
Power Plants Surveys
Aerial Photogrammetry

1630 Que St. **Lincoln, Nebr.**
1018 8th Ave. **Greeley, Colorado**

ROBERT W. HUNT CO.

Consulting Engineers

Inspection—Tests — Consultation Pipe and Appurtenances: Paving and Engineering Materials: Green and Treated Lumber

810 S. Clinton St., Chicago 7 and all large industrial centers.

Bring Your Professional Services to the attention of municipal officials who consult this Directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.

Write us for particulars

THE AMERICAN CITY
470 Park Avenue South, New York 16

Jenkins, Merchant & Nankivil

Consulting Engineers

Municipal Improvements Gas Systems
Highways & Airports Water Systems
Power Development Sewerage Systems
Traffic Surveys Industrial Plants
Flood Control Recreational Facilities
Investigations and Reports

801-805 East Miller St.
Springfield, Ill.

THE JENNINGS-LAWRENCE CO.

Civil & Municipal Engineers

Water Supply—Treatment—Distribution
Sewerage—Sewage Treatment—Paving
Drainage—Dams Surveys—Mapping
Reports Plans—Supervision

1392 King Ave. **Columbus 12, Ohio**

Johnson & Anderson, Inc.

Engineers

Sewerage & Sewage Treatment
Water Supply & Distribution
Bridges—Highway
Municipal Engineering
Flood Control and Drainage

Home Office: Pontiac, Mich.
Branch Office: Warren, Mich.

Johnson Depp & Quisenberry

Consulting Engineers

Highways **Water Supply**
Airports **Sewage Disposal**
Bridges **Surveys**

2625 Frederica St., Owensboro, Ky.

JONES, HENRY & WILLIAMS

Consulting Sanitary Engineers

Water Works
Sewerage and Treatment
Waste Disposal

2000 West Central Ave.
Toledo 6, Ohio

"WHO'S WHO"

City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

The American City Professional Service Directory

Edward C. Jordan Co., Inc.
Civil and Sanitary Engineers
Sewerage ● Sewage Disposal ● Industrial Wastes ● Drainage ● Water Supply ● Streets ● Highways ● Municipal Engineering. Investigations—Reports—Designs—Supervision.
379½ Congress St., Portland, Maine
Tel. SP. 40315

Alfred Kaehrle Associates
Consulting Engineers
Highway Planning—Highway Design
Traffic Engineering Surveys
Parking Studies — Shopping Centers
10 North Main Street
West Hartford 7, Connecticut

SANDERS A. KAHN ASSOC.
Real Estate—Planning
Urban renewal appraisals, marketability studies, shopping centers, industrial, terminals, aviation.
261 Madison Ave.
New York 17, New York
MUrray Hill 7-3363-4

KAISER ENGINEERS
General Engineering Services
Public Works
300 Lakeside Drive
Oakland 12, Calif.
Phone: CRestview 1-2211

JOHN J. KASSNER & CO.
Consulting Engineers
John J. Kassner David Levine
Preliminary Studies, Designs, Contracts, Specifications, Highways, Expressways, Structures, Drainage, Sewerage, Waterfront, Site Planning, Housing, Parking, Parks.
6 Church St. New York 6, N. Y.

KEIS & HOLROYD
Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply and Purification, Sewerage and Sewage Treatment, Garbage and Refuse Disposal and Incineration, Industrial Buildings.
TROY, N. Y.

Kirkham, Michael & Associates
Consulting Engineers
Complete Municipal & Industrial Services—Investigations, Reports, Design, Supervision of Construction, Rates, Water—Sewage & Wastes—Light & Power—Streets—Airports—Bridges & Structures.
Omaha ● Rapid City ● Fargo

A. C. KIRKWOOD AND ASSOCIATES
Engineers — Consultants
7800 The Paseo
Kansas City 10, Mo.

Bring Your Professional Services to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

J. L. JACOBS & COMPANY
Public Administration Consultants and Engineers Since 1915
Property Appraisals and Tax Equalization—Finance—Organization—Procedures
Fringe Area Problems—Facilities—Personnel Classification and Pay Plans
53 W. JACKSON BLVD., CHICAGO 4, ILL.

KREHBIEL & KREHBIEL • engineers
Consulting
DRAINAGE PLANNING SEWERAGE WATER
HIGHWAYS POOLS SUBDIVISIONS
ICE RINKS REPORTS SURVEYS
1868 NIAGARA FALLS BOULEVARD • TONAWANDA, N. Y.

KENNEDY ENGINEERS
COMPLETE PUBLIC WORKS ENGINEERING SERVICE
- WATER SUPPLY
- SEWAGE RECLAMATION
- SEWAGE AND WASTE TREATMENT

CHEMICAL AND BIOLOGICAL LABORATORY
San Francisco
Los Angeles
Tacoma
Salt Lake City

KUCERA AND ASSOCIATES, INC.
PHOTOGRAMMETRIC ENGINEERS • AERIAL PHOTOGRAPHY
CLEVELAND 24, OHIO • CHICAGO, ILLINOIS
City Mapping • Aerial Engineering Surveys • Tax Maps • Atlas Sheets • Photo Mosaics • Nationwide Service

KONSKI ENGINEERS
Planning, Design and Supervision of Construction
Bridges, Highways, Dams, Airports and Industrial Structures
Parking Studies and Parking Structures
206 E. Jefferson Street Syracuse 2, New York

The Kuljian Corporation
engineers • consultants
construction supervision
Designs • Surveys
Planning
1200 NORTH BROAD STREET, PHILADELPHIA 21, PA.
POWER PLANTS, AIRPORTS and AIRPORT FACILITIES
HIGHWAYS, EXPRESSWAYS,
WATER and SEWAGE WORKS,
FLOOD CONTROL, IRRIGATION
INDUSTRIAL PLANTS

KOEBIG and KOEBIG
ENGINEERING ● ARCHITECTURE ● MUNICIPAL PLANNING
Reports ● Investigations ● Designs ● Consultants to Cities Since 1910
3242 W. 8th Street, Los Angeles 5, California
715 Bank of America Building, 625 Broadway, San Diego, California

LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS
Studies — Reports — Designs — Supervision
Highways, Bridges, Site Planning, Industrial Buildings, Pipelines, Airports, Harbor Facilities, Traffic Analysis, Water Supply, Sewerage, Incinerators, Air Pollution, Seismic Investigations in addition to Aerial Photography, Cadastral Geodetic, Topographic and Photogrammetric Mapping.
Syosset, N. Y. Bogota, Columbia San Juan, P. R.

METCALF & EDDY
Engineers
Soils, Foundations, Waterworks, Sewage Works, Drainage, Irrigation, Flood Control, Refuse, Industrial Wastes, Airports, Highways, Military Projects, Industrial and Commercial Facilities.
Statler Building, Boston 16, Mass.

The American City
Professional Service Directory

PAN AMERICAN CONSULTANTS
Engineers and Planners
Airports—Highways—Expressways—Rapid Transit—Monorail
City & Regional Planning—Urban Renewal—Commercial & Industrial Structures
Hydrology—Hydraulics—Flood Control—Basin Development—Dams—"Sea Water Conversion"
Waterways—Harbors—Marinas—Offshore Structures
Investigations—Reports—Planning—Design
400 Montgomery St., San Francisco 4, Calif. YUkon 1-8979

NUSSBAUMER -- CLARKE and VELZY, INC.
CONSULTING ENGINEERS
SEWAGE TREATMENT — WATER SUPPLY — INCINERATION
DRAINAGE — TOWN PLANNING — APPRAISALS
327 Franklin St., Buffalo 2, N. Y. 500 Fifth Ave., New York, N. Y.

Parsons, Brinckerhoff, Quade & Douglas
Engineers
Bridges, Highways, Tunnels, Airports, Port and Harbor Works, Transportation, Parking, Traffic Studies, Power, Dams, Flood Control, Sewerage, Water Supply.
165 Broadway
New York 6, N. Y.
833 Market Street
San Francisco 3, Calif.

THE PITOMETER ASSOCIATES
Engineers
Water Waste Surveys Trunk Main Surveys Water Distribution Studies
Water Measurement and Special Hydraulic Investigations
50 Church Street New York 7, N. Y.

WILLIAM RAISCH
CONSULTING ENGINEER
REPORTS AND DESIGNS
REFUSE INCINERATOR AND SEWAGE TREATMENT PLANTS
MUNICIPAL AND INDUSTRIAL SEWAGE AND WASTES DISPOSAL
SEWERAGE AND DRAINAGE
61 HILTON AVE. GARDEN CITY, L. I. N. Y.

RAYNOR AERIAL SURVEYS
Topographic Maps City Planning Tax Maps Field Surveys
Complete Photogrammetric Services
MAIN OFFICE: CHASE BUILDING, NEW FAIRFIELD, CONN.
District offices: West Sand Lake N. Y. and Plymouth, N. H.

THOMAS M. RIDDICK & ASSOCIATES
Consulting Engineers and Chemists
369 EAST 149th STREET
NEW YORK 55, N. Y.
MOtt Haven 5-2424

WATER PURIFICATION
SEWAGE TREATMENT
PLANT SUPERVISION
CORROSION CONTROL
INDUSTRIAL WASTE TREATMENT
STREAM POLLUTION INVESTIGATIONS

LABORATORIES FOR CHEMICAL BACTERIOLOGICAL AND MICROSCOPIAL ANALYSES OF WATER, SEWAGE AND INDUSTRIAL WASTES

Louis C. Ripa & Associates, Ltd.
Designers—Engineers
Planners—Surveyors
184 S. Livingston Ave., Livingston, N. J.

DESIGN, INVESTIGATION, REPORTS, PARKS, RECREATION AREAS, HIGHWAYS, EXPRESSWAYS, OFFICE AND COMMERCIAL BUILDINGS, RESIDENTIAL SUBDIVISIONS, TRAFFIC STUDIES, GEODETIC, GEODIMETER, TOPOGRAPHIC SURVEYS, SITE PLANNING, SHOPPING CENTERS

ROBERT AND COMPANY ASSOCIATES
MUNICIPAL ENGINEERING DIVISION
ATLANTA

Water Supply • Sewage Disposal • Industrial Wastes
Incinerators • Power Plants • Valuations

MORRIS KNOWLES, Inc.
Engineers
Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
1312 Park Bldg.
Pittsburgh 22, Pa.

LADD ENGINEERING ASSOCIATES
Architects—Engineers
Municipal Public Works
FORT PAYNE ALABAMA

Lorenzi, Dodds and Gunnill
Consulting Engineers
Serving Municipalities in Pennsylvania, Ohio, and West Virginia
1406 Berger Building
Pittsburgh 19, Pa.

Bring Your Professional Services
to the attention of municipal officials who consult this directory regularly. Insert your listing in either single- or triple-card space at a very nominal charge.
Write us for particulars
THE AMERICAN CITY
470 Park Avenue South, New York 16

LOZIER ENGINEERS, INC.
Sewerage, Sewage Disposal
Water Supply, Water Purification
Refuse Disposal
10 Gibbs St., Rochester 4, N. Y.

"WHO'S WHO"
City Departments can depend upon this directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

Lublin, McGaughy & Assoc.
Architects and Consulting Engineers
Water supply, sewage disposal, airports, streets, improvements, municipal planning, buildings, recreation facilities, reports and appraisals.
220 W. Freemason St., Norfolk 10, Va.
1001 Connecticut Ave., Washington, D C.

McCLAVE & McCLAVE
Civil & Consulting Engineers
Established 1906
Municipal Problems, Surveys, Reports, Design, Supervision, Industrial Waste, Sewerage and Water Supply
Flood Control, Highways, Land Development
Cliffside Park, New Jersey
Tel. Cliffside 6-4000

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

The American City
Professional Service Directory

McNamee, Porter and Seeley
Consulting Civil Engineers
Water Supply and Treatment
Sewerage and Sewage Treatment
Waste Disposal
2223 Packard Road
Ann Arbor, Michigan

GEORGE B. MEBUS, INC.
Consulting Engineers
Water Supply, Sewage Treatment
Industrial Waste Treatment
Broad Street Trust Bldg.
Glenside, Pa.

CHANGED YOUR ADDRESS?

If so, please notify the publishers as we are anxious to have your card correct in this Directory. Thank you.

DONALD M. OAKES
Public Management Consultant
2518 Foster
Grand Rapids 5, Michigan

O'BRIEN & GERE
Consulting Engineers
Water Supply, Treatment and Distribution
Sewerage and Sewage Treatment
Industrial Waste Treatment—Flood Control and Drainage
Rate Studies—Development Planning—Surveys
400 East Genesse St., Syracuse 2, N. Y.

PATZIG TESTING LABORATORIES
Inspection Service
Chemical and Physical Testing of Paving and Building Materials, Metals, Fuels, Oils, Water, etc.
2215 Ingersoll Ave., Des Moines, Ia.

Malcolm Pirnie Engineers
Malcolm Pirnie, Carl A. Arenander
E. W. Whitlock, Malcolm Pirnie, Jr.
Robert D. Mitchell, Alfred C. Leonard
MUNICIPAL AND INDUSTRIAL
Water Supply—Water Treatment
Sewage and Waste Treatment
Drainage—Rates—Refuse Disposal
25 W. 43rd St. New York 36, N. Y.
3015 Horatio Street, Tampa 9, Fla.

ALEXANDER POTTER ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.
50 Church Street, New York 7, N. Y.

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

RUSSELL and AXON
Consulting Engineers
Civil—Sanitary—Structural—Industrial—Electrical—Rate Investigations
408 Olive Street
St. Louis 2, Mo.
Municipal Airport
Daytona Beach, Fla.

SANBORN MAP CO., INC. *(Est. 1876)*
Dept. SP, Pelham, New York, Pelham 8-1649
NEW NATIONWIDE MAPPING, FIELD, AND ANALYTICAL SERVICES
ALL TYPES BASE MAPS **— CUSTOM DESIGNED SERVICES FOR**
PLANNERS, ASSESSORS, PUBLIC UTILITIES, MARKET ANALYSTS, ENGINEERS
Atlanta
New York
Chicago
San Francisco

IRBY SEAY COMPANY
Consulting Engineers
WATER SUPPLY & TREATMENT
ELECTRICAL
SEWAGE SYSTEMS & TREATMENT
NATURAL GAS
223 Court Avenue MEMPHIS 3, TENNESSEE Jackson 7-3301

SEELYE STEVENSON VALUE & KNECHT
Consulting Engineers
Airports, Highways, Dams, Bridges, Concrete, Steel, Welding, Foundations, Stadiums,
APPRAISALS and REVALUATIONS for tax equalization
101 Park Avenue
New York 17, N. Y.

SERVIS, VAN DOREN & HAZARD
Engineers-Architects
Investigations • Design • Supervision of Construction • Appraisals
Water • Sewage • Streets • Expressways • Highways • Bridges • Foundations
Airports • Flood Control • Drainage • Aerial Surveys • Site Planning
Urban Subdivisions • Industrial Facilities • Electrical • Mechanical
2910 Topeka Blvd.
Topeka, Kans.

SMITH AND GILLESPIE
Consulting Engineers
JACKSONVILLE, FLORIDA
An Organization of Experienced Engineers Specializing in Municipal Utilities and Public Works

STANLEY ENGINEERING COMPANY
Consulting and Design Engineers
Muscatine, Iowa
Chicago — Cleveland — Washington
Monrovia, Liberia — Lagos, Nigeria

ROBERT H. STELLWAGEN
Consulting Engineers
Municipal and Industrial Waste Problems
Collection, Incineration, Salvage, Pumping, Treatment, Testing
1442 E. Outer Drive
Detroit 34, Mich.

THE STERLING COMPANY
Consulting Engineers
Water Systems — Water Treatment — Sewage System
Sewage Treatment — Airports — Swimming Pools — Paving Plans
10798 St. Charles Rock Road, St. Ann, Missouri

The American City
Professional Service Directory

STETSON, STRAUSS & DRESSELHAUS, INC.
Civil & Consulting Engineers
Los Angeles Oceanside Porterville
Investigations, Reports, Designs, Estimates
Water Supply, Drainage, Sewerage, Municipal Works, Foundations, Materials Testing, Surveying & Mapping
Main Office: 215 W. 7th St., Los Angeles 14, California

ALDEN E. STILSON & ASSOCIATES, LIMITED
Consulting Engineers
Water Supply, Sewerage, Industrial Wastes, Bridges, Highways, Industrial and Power Plant Layout, Materials Handling, Process Layouts, Studies, Surveys and Reports.
245 North High St., Columbia 15, Ohio
75 Public Square, Cleveland 13, Ohio

SURVEY ANALYSTS OF NEW YORK, INC.
PLANNING AND BUSINESS CONSULTANTS
URBAN PLANNING • TRANSPORTATION STUDIES • PARKING STUDIES
TRAFFIC SURVEY • O&D STUDIES • SITE LOCATION STUDIES
ECONOMIC AND MARKETING SURVEYS • STATISTICAL GRAPHING
1276 E. DELAVAN AVE., BUFFALO 15, NEW YORK
TX 2-0021

TIGHE & BOND
CONSULTING ENGINEERS
BOWERS AND PEQUOT STREETS
HOLYOKE, MASSACHUSETTS
TEL. JEfferson 3-3991
CIVIL, SANITARY AND ELECTRICAL ENGINEERING
INVESTIGATIONS, REPORTS, PLANS AND SPECIFICATIONS
SUPERVISION OF CONSTRUCTION AND OPERATION

TOLEDO TESTING LABORATORY
Inspection and Testing of Paving and Engineering Materials
Sub-Surface Exploration and Soil Tests
1810 North 12th Street
Toledo 2, Ohio

TRAFFIC RESEARCH CORPORATION
TRANSPORTATION PLANNING FOR METROPOLITAN AREAS AND HIGHWAY SYSTEMS
Traffic Signal Systems
Origin and Destination Surveys
Expressway and Public Transit Assignments
Traffic Surveys
Economic and Distribution Studies
Traffic Simulations
10 Columbus Circle, New York 19, N. Y.
20 Spadina Road, Toronto 4, Canada

Trafficwise Process Co.
520 Fifth Ave.
New York 36, N. Y.
Methods for progressing heavy traffic in small block cities. Primary-secondary coordination with high conducting power. Systematic coordination between highway and street traffic.
John K. Masten, Consultant, Pats. 3,926,332—3,926,333.

ALFRED H. TULL
Golf Course Architect
COMPLETE TOPOGRAPHICAL DESIGN
UNIT-PRICE SPECIFICATIONS
LARCHMONT, N. Y.
TE. 4-4017

ARNOLD H. VOLLMER ASSOCIATES
Consulting Engineers
Parks — Playgrounds — Pools
Water Supply — Sewerage — Waste Disposal — Air Pollution
Traffic and Parking
25 West 45th Street
Boston New York Louisville

HAROLD S. PRESCOTT
Consulting Civil Engineer
Design—Supervision
Water Supply—Sewerage—Dams
Subdivision & Industrial Development
594 Main St.
Placerville, Calif.

Charles C. Redman Jr.
Engineers & Surveyors
Complete Municipal Engineering, Surveying, Mapping and Planning Services.
P. O. Box 62 Kennett, Missouri
210 Monroe Jefferson City, Missouri

ARTHUR E. ROWE & ASSOCIATES
Municipal Buildings, Swimming Pools, Parking Facilities, Incinerators, Stadia, etc.
8115 Prospect Ave., Cleveland 15, O.

Schmidt Engineering Co., Inc.
Consulting Engineers
Reports, Design, Construction Supervision, Heavy Construction Project, Dams, Hydroelectric, Water and Sewerage Works
Foundation Exploration and Treatment
100 East 10th St., Chattanooga 2, Tenn.

CARL SCHNEIDER
Consulting Engineers
602 Pan American Bldg.
New Orleans 12, La.
Incineration Sanitary Fills
Reports
Refuse Collection Sanitation Studies

JOSEPH A. SCHUDT AND ASSOCIATES
Civil Engineers—Surveyors
Surveying, Land Planning Complete Municipal Services
Specializing in Subdivision Development
2451 Western Ave., Park Forest, Illinois

SCRUGGS & HAMMOND
Specializing in small city Planning and Zoning, Landscape Architecture, Parks, Schools, Subdivisions.
330 Central National Bank Bldg.
Peoria, Ill.
New Circle Road, Lexington, Kentucky

Ladislas Segoe & Associates
City Planners—Consulting Engineers
Comprehensive City, County and Regional Plans • Zoning Plans and Ordinances • Traffic and Parking Studies • Shopping Centers and Industrial Parks • Urban Redevelopment and Renewal Projects.
811 Gwynne Bldg., Cincinnati 2, Ohio

John R. Snell
ENGINEERS
Inc. 221 N. Cedar • Lansing, Mich. • IV 4-9493
Water and Sewage • Industrial Wastes • Refuse Disposal • Highways and Streets • Airports and Harbors • Bridges and Structures • Soils and Foundations • Urban Planning • Research and Development

The American City Professional Service Directory

SOIL TESTING SERVICES, Inc.
Consulting Engineers
John P. Gnaedinger Carl A. Mets
Soil Investigation, Engineering Reports, Inspection, Foundation Design.
1827 N. Harlem Ave., Chicago 35, Ill.
San Francisco; Kenilworth, N. J.; Havana, Cuba; Milwaukee, Wis.; Portland, Mich.

WIEDEMAN & SINGLETON
Consulting Engineers
Water Works, Sewers, Sewage Disposal, Appraisals, Valuations, Reports
760 W. Peachtree St., N.W.
Atlanta 8, Ga.

WILSEY, HAM & BLAIR
Engineers and Planners
Water and Sewage Works
Flood Control and Drainage
Airports, Traffic Studies and Bridges
City and Regional Planning
Utilities Rate & Valuation Studies
800 W. Colorado Blvd. Los Angeles 41
111 Rollins Road, Milbrae, California

James O. Yarger & Associates
Personnel & Management Services
Administrative and Fiscal Surveys ● Position Classification and Salary Plans ● Retirement Systems ● Personnel Ordinances & Regulations
An experienced senior staff for your use
300 Walnut St., Falls Church, Virginia

SOUTHERN MAPPING & ENGINEERING CO.
Consulting Civil Engineers
Planners and Surveyors; Airports and Highway Design; Water Works and Sewage Design; Topography; Tax Mapping Reports and Investigations; Pipe Line Surveys, Acquisition of Right of Way.
216½ Commerce Place, Greensboro, N. C.

WILEY & WILSON
Consulting Engineers
Municipal Planning, Water Supply, Sewerage, Sewage and Waste Treatment, Incinerators, Streets and Pavements, Airports, Light and Power Plants. Reports—Plans—Supervision
620 Court St., Lynchburg, Va.
711 West Main St., Richmond 20, Va.

J. B. WILSON
521 K. of P. Bldg.
Indianapolis 4, Indiana
Sewers, Sewage Treatment,
Waterworks, Water Treatment,
Gas Systems

J. C. ZIMMERMAN ENGINEERING CO.
Consulting Engineers
Water Supply and Treatment
Drainage—Flood Relief
Sewerage and Sewage Treatment
Planning Design Supervision
11121 West Oklahoma Avenue
West Allis 19, Wisconsin

HENRY B. STEEG & ASSOCIATES
Engineers
Sewage Treatment, Water Supply
Garbage and Refuse Disposal
3338 North Illinois Street
P. O. Box 5052, Station A
Indianapolis 8, Ind.

WAINWRIGHT & RAMSEY Inc.
Consultants on Municipal Finance
70 Pine Street **New York 5, N. Y.**

Sydney H. Stilley and Associates
Consulting Engineers
B. W. Kellam, Architect
Studies—Planning—Design—Plans—Supervision—Civil—Sanitary—Structural—Mechanical—Electrical—Industrial
1621 Hendricks Ave., Jacksonville, Fla.
Associate: The Thomas J. Smith Co.
Dusseldorf—Beirut—Jeddah

J. STEPHEN WATKINS
J. S. WATKINS **CONSULTING ENGINEERS** G. R. WATKINS
Municipal and Industrial Engineering, Water Supply and Purification, Sewerage and Sewage Treatment, Highway and Structures, Reports, Investigations and Rate Structures
Main Office:
416 East High Street, Lexington, Kentucky
Branch Offices:
5402 Preston Highway, Louisville, Kentucky
107 Hale Street, Charleston, W. Va.

OSCAR SUTERMEISTER
City Planning Consultant
City and Regional Comprehensive Plans—Planning, Zoning, Subdivision and Housing Laws—Protective Covenants—Industrial Park Design—Performance Standard—Traffic—Urban Defense.
5923 Johnson Ave., Bethesda, Md.
Washington 14, D. C.

LEONARD S. WEGMAN CO.
Consulting Engineers
Refuse Disposal, Water Supply, Sewage Collection & Treatment, Highways, Bridges, Special Structures, Shore Erosion & Waterfront Works
235 East 45th Street **New York 17, N. Y.**

TIPPETTS-ABBETT-McCARTHY-STRATTON
Engineers and Architects
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, Highways, Railroads, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Designs, Supervision, Consultations.
375 Park Ave. **New York 22, N. Y.**

ROY F. WESTON, INC.
Engineers — Biologists — Chemists
Water — Sewage — Industrial Wastes — Refuse
Stream Pollution — Air Pollution — Industrial Hygiene
Surveys—Research—Development—Process-Engineering—Plans and Specifications
Operation Supervision—Analyses—Evaluations and Reports
NEWTOWN SQUARE, PENNSYLVANIA

WESTON & SAMPSON
Consulting Engineers
Hydraulic and Public Health Engineering—Engineering and Laboratory Investigations
Supervisor of Purification Plants
14 Beacon St. **Boston, Mass.**

WALTER H. WHEELER
Consulting Engineers
Design supervision of Construction, Bridges, Buildings, Parking Garages, Foundations, Coffer Dams, Grain Elevators, Flat Slabs with grillage caps, Special Structures.
802 Metropolitan Building **Minneapolis 1, Minnesota**

WHITMAN & HOWARD, Inc.
Engineers — Consultants
Municipal Planning, Water Supply, Drainage, Sewerage, Industrial and Municipal Waste Treatment
89 Broad St. **Boston, Mass.**

GEORGE WIGHT
Consulting Engineers
446 East Main Street
Barrington, Illinois
25 South Washington
Naperville, Illinois

WHITMAN, REQUARDT AND ASSOCIATES
Engineers
Baltimore 2, Md.

WILSON & COMPANY
Engineers & Architects
Water, Sewerage, Streets, Highways, Dams, Bridges, Electrical, Airfields
Chemical Testing Lab—Aerial Mapping—Electrical Computer Services
SALINA, KANSAS **WICHITA, KANSAS**

WANTED

180 MILLION AMBASSADORS FOR THE UNITED NATIONS

UN

Any man or woman residing in the United States...with the heart, purpose, and willingness to help prevent war and preserve freedom...may apply.

This is a job that will last all your life—and your life may depend on the job you do.

You will be an ambassador for the United Nations.

Your territory will be your neighborhood, your shop or office, your town, city, state or as much of the earth as you can encompass.

Your job:

To inform yourself about the United Nations, and keep others informed on—

- What the UN has done and is doing to prevent war while preserving freedom;
- What it has done and is doing to stamp out poverty and prevent disease;
- What it has done and is doing to establish a world of law and justice.

For further information—and a free leaflet about the United Nations—write to:

UNITED STATES COMMITTEE FOR THE UNITED NATIONS

375 Park Ave., New York 22, N. Y.

A non-partisan, non-profit educational organization whose Chairman is appointed by the President of the United States.

Index to Advertisers

Professional Service Directory, 179-189

Acme Visible Records, Inc. 151
Aeronautical Electronics, Inc. 152
Alabama Pipe Co. 174
Alexander Corp., D. J. 159
Allis-Chalmers, Material Handling Div. 21
American Bitumuls & Asphalt Co. 65
American Cast Iron Pipe Co. 24
American Marietta Co. 162
American Motors Corp. 132
American Pipe and Construction Co. 55
American Steel & Wire Div. U. S. Steel 50, 51, 68, 69
American Telephone & Telegraph Co. 4
Anthracite Equipment Corp. 173
Armco Steel Corp. 140
Asplundh Chipper Co. 158
Atlas Copco, Inc. 45
Automatic Voting Machine, Div. of Rockwell Mfg. Co. 145

Bell Telephone System 4
Bossert Hotel 174
Byron Jackson Pumps, Inc. 6

Carpenter Mfg. Co. 171
Cast Iron Pipe Research Association 42, 43
Caterpillar Tractor Co. 10,11
Champion Lamp Works 106,107
Chase Manhattan Bank 12
Clark Equipment Co., Construction Machinery Div. 200
Climax Engine Mfg. Co. 144
Clow & Sons, James B. 66
Cole Layer Trumble Co. 175
Cole Mfg. Co., R. D. 173
Columbia-Geneva Steel Div. U. S. Steel 68, 69
Cooper-Bessemer Corp. 199
Crouse-Hinds Co. 124, 125
Cyclone Fence Dept., American Steel & Wire 50, 51

Dana Corp. 164
Darley & Co., W. S. 139
Davey Tree Expert Co. 157
Deere Industrial Div. 15
Dempster Brothers, Inc. 67
Detroit Stoker Co. 32
Die Embossed Sign Manufacturers 48
Dow Corning Corp. 122
Dual Parking Meter Co. 103
Duncan Parking Meter Corp. 115

Eddy Valve Co. 177
Enterprise Engines, Power Div. of General Metals Corp. 148
Evinrude Motors 139

Fitchburg Engineering Corp. 150
Flexible, Inc. 141
Ford Motor Co., Ford Div. 16, 17
Foxboro Co. 38, 39

Gamewell Co. 134
General Railway Signal Co. 104
Gopher Stamp & Die Co. 48
Good Roads Machinery Corp. 167
Grimm Stamp & Badge Co. 48
Gruendler Crusher & Pulverizer Co. 174

Hersey-Sparling Meter Co. 52
Holophane Co., Inc. 120, 121
Hough Co., Frank G. 18, 19
Hydro E-Z Pack Div., Hercules Galion Products, Inc. 146

International Harvester Co. 61
International Salt Co., Inc. 8
Invex, Inc. 118, 119

Jefferson Hotel 174
Johns-Manville 138
Johnson Gear & Mfg. Co. 171

Lake Shore Markers, Inc. 175
Layne & Bowler, Inc. 35
Line Material Industries 27
Lock Joint Pipe Co. 46
Lyle Signs, Inc. 48

M & H Valve & Fittings Co. 60
Mack Trucks, Inc. 40, 41
Magee-Hale Park-O-Meter Co. 127
Magline, Inc. 167
Millerbernd Mfg. Co. 136
Minnesota Mining & Manufacturing Co. 28, 29
Miro-Flex Co., Inc. 48, 135
Mitts & Merrill 169
Mobile Aerial Towers, Inc. 168
Monarch Road Machinery Co. 170
Moore, Inc., P. O. 139
Morton Salt Co. 143
Motorola Communications & Electronics Inc. 110
Mueller Co. 2, 22

National Chemsearch Corp. 63
National Lead Co. 57
Neenah Foundry Co. 62
Neptune Meter Co. 70
Newark Brush Co. 156
Northern Gravel Co. 44

Onan Div., Studebaker-Packard 30

Peabody Engineering 64
Pfaff & Kendall 130
Phelps Dodge Refining Corp. 154
Pittsburgh-Des Moines Steel Co. 49
Pittsburgh Plate Glass Co., Chemical Div. 149
Plymouth Motors Corp. 112
Potsdam Welding & Machine Co. 155
Preload Co., Inc. 172

Radiator Specialty Co. 170
Revere Electric Mfg. Co. 108
Robertson Hotel, James 172
Rolatape, Inc. 147

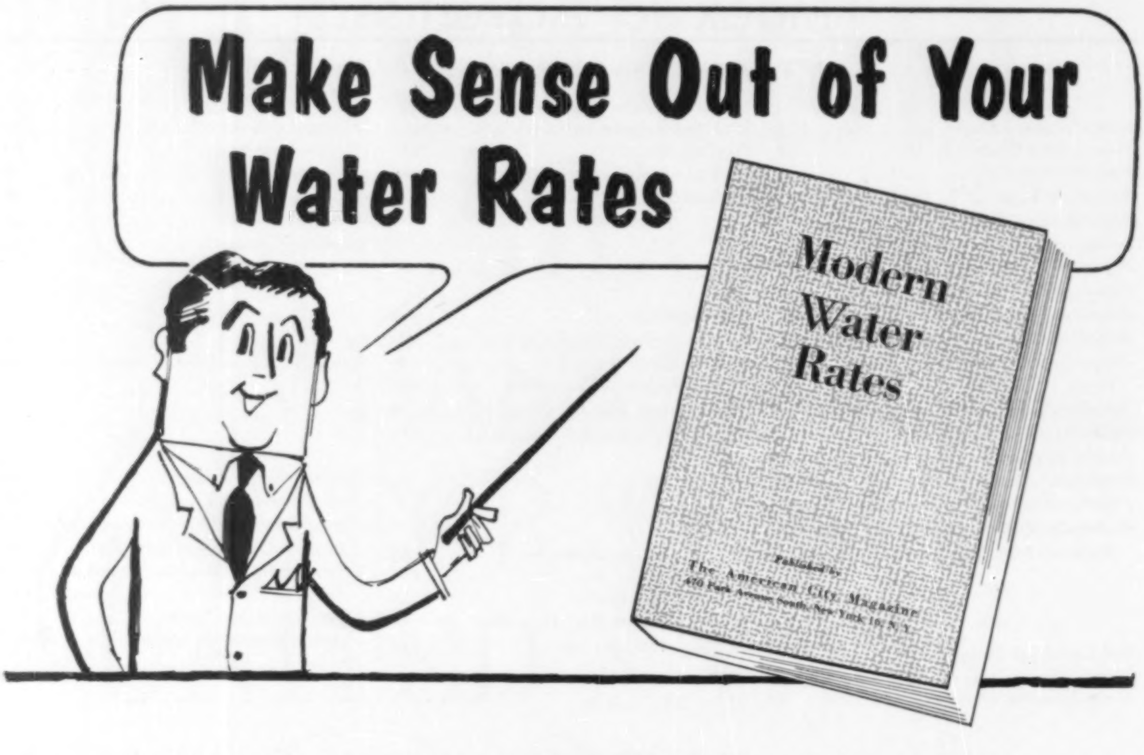
Steel Plate Fabricators Association 166
Studebaker-Packard Corp. 59
Sylvania Electric Products Inc. 128

Tennessee Coal & Iron Div., U. S. Steel 68, 69
Tennessee Corp. 45
Trailevator Div., Magline, Inc. 167

Union Metal Mfg. Co. 116
United States Pipe & Foundry Co. 36, 37
U. S. Steel Export Co. 68, 69

Vermeer Mfg. Co. 155
Vulcan Signs & Stampings Div. 48

Wald Industries, Inc. 131
Willys Motors, Inc. 160


Make Sense Out of Your Water Rates
Modern Water Rates
Published by
The American City Magazine
470 Park Avenue South, New York 16, N.Y.

This is the book that will tell you how to determine—

—whether your water rates are earning the amount that they should to support this valuable service.

—how much you should raise your rates before serving those who have moved outside your city limits in order to escape city taxes but at the same time want the benefits of your municipal water services.

—how to develop a water-rate schedule that charges each group of users fairly, but not excessively. In other words, how to get rid of the water supply "free loaders."

—how to charge for fire protection logically and fairly, and what to do about the air-conditioning load.

—how to charge for water uses by building contractors; what to do about nuisance charges; how to charge fairly for service taps.

If you want all this, backed by representative examples of water rates now in use in cities all over the nation, then you ***need*** this book, ***just off the press***—

Modern Water Rates

Order Today. Use the coupon below.

THE AMERICAN CITY
BOX AC 1261
470 Park Avenue South
New York 16, New York

Please mail at once .... copies of MODERN WATER RATES.

I enclose $........ in payment (postage paid).

Bill me ☐.

Note: $2.75 per copy payment with order.
$3.00 plus postage, if billed on account.

Name: ....

Title: ....

Address: ....

1961 ANNUAL INDEX

Volume LXXVI

The American City

Index to subjects

Issue & Page

ADMINISTRATION AND GOVERNMENT
(City Manager Appointments)
Jan., 150; Feb., 158; March, 191; Apr., 171; May, 185; June, 222; July, 171; Aug., 158; Sept., 218; Oct., 186; Nov., 193; Dec., 153
1,736 council-manager cities -------- Jan., 121
City convention helps Venezuela ---- Jan., 127
City manager jumpers studied ------ Jan., 129
Cities, county cooperate ----------- Jan., 147
Avondale marks advances ---------- Feb., 23
Redistricting case challenges rural-dominated legislatures ----------- Feb., 37
Council-manager cities excel ------- Feb., 37
Electrical voting aids meetings ------ Feb., 98
Intergovernmental cooperation ----- Feb., 106
Touring U. S. mayors ------------- Feb., 137
Modesto's deputy city manager ----- Feb., 143
Higher bid must be justified by law -- Feb., 161
How cities spend their money ------ Mar., 39
First feminine commissioner ------- Mar., 39
Long Beach will study compact cars -- Mar., 185
Phoenix intern program ---------- Mar., 192
"People problems" in city administration -------------------------- Apr., 162
Pay rises in the Pittsburgh area ---- Apr., 162
Durham defeats city-county government -------------------------- Apr., 163
Advice on city inspections -------- May, 142
The city manager and his council --- May, 144
Alton cuts costs on insurance plan -- May, 153
Who's the successful bidder? ------- May, 167
Rural-urban conflict ebbs in Texas --- May, 181
Who becomes a city manager? ------ June, 36
Upgrading city-administrator posts -- June, 36
Recoding Phoenix ordinances ------ June, 219
In-service training for efficiency ----- June, 222
Six suburbs form cooperating group -- June, 229
Municipal scorecard for 87th congress July, 5
What Oklahoma expects of city managers ---------------------- July, 43
AMA stresses intergovernmental co-operation -------------------- Aug., 35
14 states add billboard controls ---- Aug., 35
We rent our equipment ----------- Sept., 89
Code administration ------------- Sept., 209
Equipment works more, operates for less ---------------------------- Oct., 97
Philadelphia raises salaries --------- Oct., 108
Long-tenure city managers --------- Oct., 186
Municipal group insurance -------- Dec., 93
Downtown Grand Rapids to compete Dec., 94
New type of wage-salary plan ----- Dec., 133
Dade County re-indorses Metro ---- Dec., 150

AERIAL MAPPING—see Planning

AIR POLLUTION
(Air pollution control notes)
Jan., 26; Feb., 37; Mar., 39; Apr., 22; May, 25; June, 36; July, 43; Aug., 35; Sept., 45; Oct., 34; Nov., 30; Dec., 26
Philadelphia's smog detector ------- Feb., 94

AIR CONDITIONING
Air conditioning utility for Hartford project ------------------------- June, 210

AIRPORTS AND AVIATION
Curved layout for airport ---------- Jan., 85
An area-service airport ------------ Mar., 95
$375,000,000 for airports ---------- Sept., 211
If you have airport problems ------ Nov., 160

AWARDS—ACHIEVEMENTS—HONORS
City officials honored ------------- Jan., 26
The best in the U. S. ------------- Feb., 31
Philadelphia wins improvement award -------------------------- Mar., 114
All-America cities for 1960 -------- Apr., 156
Dade County hires handicapped ---- May, 25
Austin wins safety award ---------- July, 165
90 cities vie for All-America title --- July, 171
City "managetrix" -------------- Sept., 45
Cities honored by Freedoms Foundation -------------------------- Sept., 45
Fellowships for graduate study ---- Nov., 18
1961 aid-to-education award ------- Nov., 169
APWA elects officers, presents awards ------------------------- Nov., 169
City-planning fellowships --------- Dec., 26
All-America cities finals ---------- Dec., 147

BEAUTIFICATION
Golf course used as tree nursery --- Jan., 89
Americas' coats of arms displayed --- Jan., 96
"Salute to the Seasons" ----------- June, 153
Erie's parking meters are attractive -- Oct., 92

BOND MARKET
Jan., 155; Feb., 169; Mar., 209; Apr., 187; May, 197; June, 235; July, 181; Aug., 167; Sept., 235; Oct., 199; Nov., 203; Dec., 159
Municipal bond sales stay active ---- Mar., 43

BUILDINGS
Municipal building design --------- Jan., 88
San Antonio's junior city halls ----- Jan., 119
Biggest dome in the world -------- Feb., 99
Minit garage for Trenton ---------- Mar., 143
Prize-winning civic center --------- Mar., 157
Work begins on Wright-designed center --------------------------- Apr., 22
Central garage ends duplication ---- May, 87
Utility, simplicity, charm ---------- May, 107
Tenafly's civic center ------------- May, 116
Safety-conscious convention hall ---- June, 173
Motor equipment in Oklahoma City -- July, 96
Miami gets ultra-modern jail ------- July, 107
County building used as ice rink --- Aug., 99
Circular courthouse for triangular site ---------------------------- Aug., 116
Santa Monica auditorium ---------- Sept., 97
City hall annex is H-bomb-proof --- Sept., 112
Panels cover city hall steeple ------ Sept., 209
The air-conditioning was free ------ Oct., 107
"Y" the difference --------------- Oct., 147
Youngest California city — oldest city hall ------------------------- Oct., 169
Minneapolis' new library ---------- Nov., 120
What a good auditorium needs --- Nov., 165

BUSINESS MACHINES AND SYSTEMS
A year with punched-card accounting Jan., 75
Posting payments, buying tape analysis --------------------------- Feb., 93
Accounting with electronic computer -- May, 104
Jackson bills sensimatically -------- June, 103
Electronic data processing --------- July, 161
Computer contract --------------- Aug., 143
Business machines for water works -- Sept., 165
Central reproduction division ------ Oct., 116
Pittsburgh's punched cards -------- Nov., 106
Automation plus indoctrination ---- Dec., 91

CIVIL DEFENSE—see Public Safety

EDITORIALS
Council management myths -------- Jan., 7
More metro headaches ----------- Mar., 7
Next year's snow-removal program -- Mar., 7
The president on urban problems --- Apr., 7
The question of urban coordination -- May, 7
Water-supply trends ------------- June, 7
Kitchen of democracy ------------ July, 7
The Newburgh 'revolution' -------- Aug., 7
Versatility and resourcefulness ----- Sept., 7
Understanding federal aid --------- Oct., 7
Let's look at the water "crisis" ---- Nov., 7

EDUCATION AND TRAINING
City engineering training course ---- Jan., 125
Firemen recruit training ----------- Sept., 161
Non-governmental Fulbrights ------ Sept., 169

FINANCE AND TAXATION
Cost accounting ----------------- Mar., 91
Urges tax on land instead of buildings ---------------------------- Nov., 94
Cleveland's revolving fund -------- Nov., 178

GAS—see Power

HOUSING
Renewal housing uses aluminum --- Mar., 116
No one-class housing ------------ May, 25
Tallest apartment buildings -------- May, 103
Public housing spurs community ---- May, 161
Housing bill and our cities -------- Aug., 5
Garden apartments are good ------ Nov., 99
Smallest public housing project ---- Dec., 99

INDUSTRY AND COMMUNITY
How a city is aiding a new college -- Sept., 118

Issue & Page

LAND DEVELOPMENT
Hillside development costs extra ---- Jan., 132

LEGAL
(Legal notes and decisions)
Jan., 149; Feb., 157; Mar., 189; Apr., 169; May, 182; June, 221; July, 167; Aug., 157; Sept., 217; Oct., 185; Nov., 191; Dec., 151
Low bid not needed for concessions -- Mar., 147
Legal aid for historic building ----- Apr., 129
New Jersey updates city,-county laws Apr., 138
Attorneys to recover rigged-bid damages ------------------------- June, 177
Dade County saves on legal costs --- Sept., 108

LIGHTING
New street lighting standard ------- Jan., 112
Bloomington lighted by plan ------- Jan., 115
Payette glitters at night ---------- Jan., 117
Lighting a ramp ----------------- Jan., 117
Modern lights on every Cicero street -- Feb., 117
Light doubled and redoubled ------ Feb., 120
Lest we forget ------------------ Feb., 120
You could call this alumination ---- Feb., 122
More about Alhambra's median strip -- Feb., 122
Vancouver's five-year plan -------- Feb., 122
Some of the best in street lighting -- Mar., 127
Lake Geneva's lighting ----------- Mar., 131
NEMA's street-lighting section ----- Mar., 131
Faithful to mercury -------------- Mar., 131
Street lighting in Houston -------- Apr., 117
What's wrong with this lighting? --- Apr., 119
A light every 120 feet ----------- Apr., 121
Now one of the world's brightest --- Apr., 121
Mercuries rising in Lake Worth ---- Apr., 125
All the streets are fluorescent ------ Apr., 125
Electric ground faults at airport ---- May, 109
Safer streets in Ridgway ---------- May, 127
Hopkinsville's relighting detailed ---- May, 129
New outdoor lamp on the way ----- May, 130
Subdivision lighting ------------- May, 133
Better business and less crime ----- May, 133
Prelude to municipal floodlighting -- June, 143
Mercuries modernize street -------- June, 144
Cleveland's mall is now lighted ---- June, 147
What is safe roadway lighting? ---- June, 147
Tulip time is light-up time ------- July, 151
Alabama towns get brighter ------- July, 131
San Antonio's aorta -------------- July, 132
Cleveland's square is a super-moon -- July, 135
Mercury luminaire for streets ------ July, 135
Olympians like aluminum standards -- July, 137
Kids keep on playing at night ------ July, 137
First-class citywide lighting -------- Aug., 126
A subdivision lights itself --------- Aug., 129
Wyandotte's bright-dim lighting ---- Aug., 130
One of the five brightest --------- Sept., 135
More light on the field ----------- Sept., 137
Planned street lighting ----------- Sept., 137
Buffalo tests plastic conduit ------- Sept., 138
Four footcandles downtown ------- Sept., 143
Auto accidents quadruple at night -- Sept., 143
Get the wires underground ------- Oct., 117
More light for Hope ------------- Oct., 135
Eloquence of good street lighting --- Oct., 136
Downtown safer; business improves --- Oct., 139
They asked and were willing to pay -- Oct., 141
Tennessee uses pedestal lighting ---- Oct., 141
Five to eight footcandles downtown Nov., 114
Safer and more pleasant in Asheville Nov., 143
Portland's fluorescents and mercuries Nov., 144
High spots in highway-lighting design Nov., 144
Light for fishing ---------------- Nov., 147
Filament for dwellings, mercury for business ------------------------ Nov., 151
Cleveland's city hall lights up ----- Nov., 151
A do-it-yourself Christmas tree ----- Dec., 71
Faster, safer and more efficient ---- Dec., 101
Public support brings new lighting Dec., 114
Residential mercuries ------------ Dec., 117
Light for the jug handles --------- Dec., 123
A realistic price for street lighting -- Dec., 123
Sanger "enlarges" parking lot ------ Dec., 126

MICROFILM—see Records

MOTION PICTURES—
See Public Relations and Education

OBITUARIES
Harold Sinley Buttenheim --------- Feb., 7
Alden W. Welch ----------------- Dec., 7

INDEX TO SUBJECTS—(Continued)

Issue & Page

OUR MUNICIPAL NOTEBOOK
Jan., 25; Feb., 8; Mar., 9; Apr., 19; May, 9; June, 28; July, 9; Sept., 9; Oct., 9; Nov., 13; Dec., 13

PAINTING
How we paint steel structures ---- May, 172

PARKING FACILITIES AND PARKING METERS
Manhattan gets a municipal garage ---- Jan., 82
More revenue from parking meters ---- Jan., 83
Parking meters in Ohio ---- Feb., 113
Tight parking enforcement ---- Mar., 96
Newport Beach's parking policy ---- Mar., 119
Creating 1,000 parking spaces ---- Apr., 106
New meter enforcement helps police Apr., 112
Parking program with a future ---- May, 120
Don't kill the parking-meter hen ---- May, 125
Engineered lighting for a garage ---- June, 124
Parking a world-wide problem ---- June, 139
Compact repair cart ---- June, 139
400-car parking unit for 23% less ---- June, 140
Fast figuring of parking charges ---- July, 120
All-night parking on streets ---- July, 125
Elevator parking ---- July, 129
Parking meters in Iowa ---- Aug., 123
Vandal-proof parking meters ---- Aug., 125
Underground parking for New York Aug., 151
Self-supporting offstreet parking ---- Oct., 131
Curb parking in Tokyo ---- Oct., 133
One tap of the hammer ---- Nov., 138
New parking-structure design ---- Dec., 80

PARKS AND PLAYGROUNDS
Golf course used as tree nursery ---- Jan., 89
Use our marina! ---- Jan., 98
Aquarium drills salt-water wells ---- Feb., 28
New swimming pool filter standards ---- Feb., 28
Swim all season for $12 per family ---- Feb., 83
Miami uses surplus plane for park ---- Mar., 27
Park purchase on installment plan ---- Mar., 27
A city school park program ---- Mar., 112
Save with mechanized leaf pick-up ---- Apr., 29
Christmas trees prevent beach erosion Apr., 78
"Good Parks" is our slogan ---- Apr., 89
$176.48 plants a tree ---- May, 31
Golf course is a money-maker ---- May, 31
Park maintenance fundamentals ---- May, 100
Park shelters win award ---- June, 33
Deer repellent protects parks ---- June, 33
More swimmers per dollar ---- June, 120
"Salute to the Seasons" ---- June, 153
Golf Courses ---- June, 186
Real tigers for toy ones ---- July, 28
Are your cemetery rates too low? ---- July, 28
Plans new golf course ---- July, 28
First stage of marina completed ---- July, 92
Hialeah opens giant pool ---- Aug., 29
Fire protection tips for parks ---- Aug., 29
A year-round park program ---- Aug., 111
Find fun in Phoenix ---- Aug., 145
Precast curbs for sandboxes ---- Sept., 37
From golf balls to grading ---- Sept., 37
Ithaca dredges for a marina ---- Sept., 120
Put a better bite ---- Sept., 179
Industrial parks ---- Sept., 186
No fishing except for children ---- Oct., 33
Swimming pool ordinances ---- Oct., 33
Tips for swimming pool operators ---- Oct., 112
Tots fight fires on retired truck ---- Nov., 34
Rifle range makes a good neighbor Nov., 34
Need for marinas on the rise ---- Nov., 34
Waterways need continuous maintenance ---- Nov., 102
Keeping Saginaw green ---- Nov., 116
Small vehicles aid park departments Dec., 20
Brush chipper pays for itself ---- Dec., 20
Cicero's aluminum swimming pool Dec., 89

PERSONNEL
Selecting top-grade city employees ---- Jan., 73
Sanitary engineer retires ---- Jan., 82
Towns improve personnel management ---- May, 18
How to manage municipal personnel ---- May, 117
Richmond's "Operation Share" ---- May, 139
Physical exams benefit all ---- May, 176
City employment rises 1953-60 ---- May, 186

PEST AND WEED CONTROL
The best way to kill mosquitoes ---- Jan., 141
Lions give funds to kill insects ---- Mar., 94
Insecticides for dutch elm disease ---- May, 115
Electronic hotfoot eliminates bugs ---- July, 103
Solving the mosquito problem ---- Aug., 93
More efficient weed spraying ---- Sept., 92

PLANNING AND ZONING
(Zoning and Planning Decisions)
Jan., 147; Feb., 151; Mar., 186; Apr., 165; May, 179; June, 217; July, 167; Aug., 155; Sept., 213; Oct., 181; Nov., 185; Dec., 149
Faults in city planning structures ---- Jan., 86
Planning seminars ---- Feb., 94
How cities can compete successfully ---- Feb., 97
ABC's of zoning ---- Feb., 145
Challenges to cities ---- Feb., 154
Suburbia no social blight ---- Mar., 90

Issue & Page
20-year watershed program ---- Mar., 104
City-county planning ---- Mar., 115
Cities, generators of civilization ---- Mar., 177
Improvements in new subdivisions ---- Mar., 183
Two city-planning training courses ---- Apr., 22
701 to the rescue ---- Apr., 91
Electronic city surveying ---- Apr., 96
Find those lost ratables ---- Apr., 100
Good planning brings benefits ---- Apr., 130
Cooperative city-planning university course ---- Apr., 172
Plans metropolitan districts ---- May, 111
Blueprint for Bluefield, W. Va. ---- May, 141
University city-planning course ---- May, 146
Small suburb planning ---- May, 169
Fort Worth study shows growth need May, 171
Don't "suburb" me in ---- June, 111
Philadelphia's "skid row" to get clean-up ---- June, 130
Limited-purpose annexation ---- June, 189
Center to study urban problems ---- June, 193
Philadelphia's long-range plans ---- July, 89
Prescription for ailing downtown ---- July, 106
Sacramento develops deep lots ---- July, 116
Planning program brings results ---- Aug., 100
Where malls stand today ---- Aug., 107
Chicago expands its Burnham Plan ---- Sept. 102
Miami Beach mall gets transit ---- Sept., 197
Land-use planning attracts industry ---- Sept., 203
Bankrupt principles of urban growth ---- Oct., 101
New downtown coming to New Rochelle ---- Oct., 103
Nashville area to get air survey ---- Oct., 161
The aerial surveys come first ---- Oct., 173
50-year-old plans read like new ---- Oct., 183
Preserve old trees in new subdivisions ---- Nov., 112
Plan or perish ---- Nov., 181
"Tax-balanced" land-use plan ---- Dec., 88

POPULATION
26 new cities of 100,000 plus ---- Jan., 26
Populous areas attract more people ---- July, 177

POWER
Two-plant power system ---- Jan., 95
Boomer Lake power dividends ---- Mar., 109
Colman establishes electric system ---- May, 146
Two-in-one utility truck ---- June, 114
Power installation brings savings ---- June, 185
Municipal power systems lower rates ---- July, 43
Houma's power-plant enlargement ---- Sept., 57

PUBLICATIONS
(Municipal and Civic Publications)
Jan., 154; Feb., 169; Mar., 202; Apr., 181; May, 195; June, 231; July, 179; Aug., 165; Sept., 231; Oct., 195; Nov., 201; Dec., 157

PUBLIC RELATIONS
(Municipal Public Relations—
The City Tells Its Story)
Feb., 125; Mar., 139; Apr., 141; May, 135; June, 159; July, 139; Aug., 133; Sept., 147; Oct., 151; Nov., 153; Dec., 137
How to cure house-sewer complaints ---- Jan., 21
Annual report is a calendar ---- Jan., 132
Philadelphia story ---- Feb., 149
Open house for utility program ---- Apr., 103
A festival boosts city economy ---- June, 179
Observe national public works week ---- Sept., 43
Los Altos learns people's opinions ---- Sept., 155
Top public works men-of-the-year ---- Oct., 156

PUBLIC SAFETY
Turbine-powered pumping engine ---- Jan., 23
Alarms simplified in Anderson ---- Jan., 23
Low-cost fallout shelter ---- Jan., 84
County police like it ---- Jan., 93
Springfield features its snorkel ---- Feb., 31
Township to radio car ---- Feb., 31
Yazoo City learned fire safety ---- Mar., 35
Phoenix fire alarm improved ---- Mar., 35
Is your police badge alive? ---- Mar., 179
Police-fire integration ---- Mar., 179
Old fire pump builder still at it ---- Apr., 35
Leased police cars ---- Apr., 35
Police-dog program in St. Louis ---- Apr., 35
Talking out police reports ---- Apr., 79
A dousing for harbor fires ---- May, 27
Night parking prohibited ---- May, 27
Something for everyone ---- May, 27
Attack-warning system ---- May, 103
Fire dispatching in the metropolis ---- June, 47
Fire-fighting scout cars ---- June, 47
Better drivers save cities money ---- June, 112
New times—better police ---- June, 119
Special attention to school safety ---- June, 137
The Dallas fire department at 75 ---- July, 26
Microwave pole tops city hall ---- July, 26
Cities fight to keep police-firemen ---- July, 102
Transistorized-radio network ---- July, 104
Running a small police force ---- July, 112
Miami's municipal communications ---- July, 117
New Brighton's rescue unit ---- Aug., 33
Two-way radio for highway vehicles Aug., 33
Putting on the dog ---- Aug., 33
Combined fire-disaster truck ---- Sept., 33
Anaheim fire department on TV ---- Sept., 33

Issue & Page
Police cars get new insignia ---- Sept., 106
Cleveland's police ambulances ---- Sept., 124
West Hartford wins new fire rating ---- Sept., 144
A diesel-powered pumper ---- Sept., 144
Firemen recruit training ---- Sept., 161
Substation fire-alarm system ---- Sept., 193
Low-slung, all-wheel drive ---- Sept., 193
Fire department station wagons ---- Oct., 25
Miami airport's fire department ---- Oct., 25
Polaroid cuts costs for mug shots ---- Oct., 109
Crime Index ---- Oct., 149
"Crossband" police radio system ---- Oct., 171
Pint-sized jet-powered fireboat ---- Nov., 36
Police-car colors match the rainbow Nov., 36
Small community 2-way police radio Nov., 36
Health club for fitness program ---- Nov., 195
Portland's cab-forward fire trucks ---- Dec., 31
Warning signals ---- Dec., 31
Seattle's plastic police boat ---- Dec., 31
A fire station needs color ---- Dec., 92
FBI reports crime at all-time high ---- Dec., 118
Try a citizens' band radio system ---- Dec., 129

PURCHASING
Bills computed electronically ---- Jan., 18
Central purchasing for small cities ---- Jan., 122
Public purchasing executives beware ---- Feb., 129
Help in buying uniforms ---- Mar., 145
Tight municipal specifications ---- Apr., 127
Bid prices to Tennessee cities ---- Apr., 127
Fort Lauderdale's purchasing ---- May, 167
Centralized municipal purchasing ---- June, 195
How Phoenix makes 12,000 purchases July, 143
Gasoline "shrinkage" drops ---- Aug., 153
It pays to shop around ---- Sept., 185
Police-car purchasing improved ---- Oct., 106
How Miami's Metro purchases ---- Oct., 125
The practical side of city purchasing ---- Nov., 157
Identical salt bids go in Milwaukee Nov., 160
Phoenix turns auctioneer ---- Dec., 102

RECORDS
Duplicates of records easier ---- Mar., 153
Tax mapping to bring tax-income boost ---- May, 165
Records meetings electronically ---- Oct., 122

REFUSE COLLECTION AND DISPOSAL
Self-supporting refuse program ---- Jan., 79
More service at less cost ---- Feb., 35
Interstate refuse disposal ---- Feb., 35
The sanitary fill—how it operates—Part I ---- Feb., 84
Sanitary landfill by contract ---- Feb., 104
Big machine for a big job ---- Mar., 29
Annexation requires refuse changes ---- Mar., 29
Tighter controls on refuse burning ---- Mar., 29
The sanitary fill—how it operates ---- Mar., 98
Private refuse collection works ---- Mar., 153
Refuse collection charges ---- Apr., 36
Plastics to the rescue ---- Apr., 36
Refuse composting in Phoenix ---- Apr., 36
The sanitary fill—how it operates ---- Apr., 84
Doubled refuse collections costs ---- Apr., 102
Refuse improvement gains customers ---- May, 29
Colored refuse containers ---- May, 29
Landfill proven under fire ---- May, 94
Town and village teamwork ---- May, 108
Faster, cleaner refuse collection ---- June, 12
Contact cards ---- June, 12
Revolving grates make the difference June, 109
A thorough clean-up campaign ---- June, 115
Novel refuse transfer station ---- June, 122
Landfill provides garage site ---- July, 25
48 trucks serve 56,800 dwellings ---- July, 25
A residential incineration program ---- July, 98
Mount Holly's refuse program ---- July, 118
Courtesy ticket is persuasive ---- Aug., 31
Britons discard their "dust bins" ---- Aug., 31
Incinerators solve refuse problem ---- Aug., 102
Prowlers or municipal employees? ---- Aug., 104
Changed refuse requires better fly-ash control ---- Aug., 113
Incentive system cuts costs ---- Sept., 31
Landfill salvage nets $11,639 ---- Sept., 31
A cleaner city through teamwork ---- Sept., 113
Philadelphia's alley-cat fleet ---- Oct., 22
Hammermill grinds lumber ---- Oct., 22
Refuse collection safety pays off ---- Oct., 110
Abilene cuts collection costs ---- Nov., 27
New incinerator-design group ---- Nov., 27
How hot is "too hot" in an incinerator? ---- Nov., 104
White uniforms for sanitation and safety ---- Dec., 33
Miami's "crash" trash pick-up drive Dec., 33
You don't need a tall stack ---- Dec., 74

SEWERAGE AND SEWAGE TREATMENT
Child-safe storm-water inlets ---- Jan., 21
How to cure house-sewer complaints Jan., 21
A sewer goes in a sewer ---- Jan., 76
Street-sewer maintenance practices ---- Jan., 100
Siphon system cuts sewerage costs ---- Jan., 103
Unconventional but workable ---- Feb., 25
Garbage grinding and sewage strength Feb., 25
Modern is the word for the Weirton Sewage plant ---- Feb., 100

INDEX TO SUBJECTS—(Continued)

Issue & Page
Hurricane antidote Mar., 25
Sewage purification policy Mar., 25
Pennsylvania leads in contracts Mar., 25
Sewage lagoon with a difference Mar., 88
More digestion capacity but no new digesters Mar., 106
Fast pipe-laying increases safety Apr., 33
Small cities pay more for purification Apr., 33
Keep chemical costs down Apr., 80
Rubber gasket controls infiltration Apr., 83
New plant separates sewage flows Apr., 93
By-product sales cut treatment cost May, 23
Correcting sewer-ordinance inequities May, 23
New equipment for an old plant May, 92
Alternate bidding is worth the trouble May, 110
Mammoth pump discharges 466,900 gpm June, 31
A big bypass June, 31
Back in the business of sewage purification June, 106
Sewage plant features pre-fab lab June, 213
Sewer cleaning by contract pays July, 23
It smells, or does it? July, 23
Building sewers today for tomorrow July, 100
Shoring without pile-driving July, 106
What ground garbage does to sewerage system July, 108
Polyethylene - film liner prevents seepage Aug., 25
High loading rates save money Aug., 117
Children swing bond election Aug., 149
No more night life for insects Sept., 22
Vanilla helps odor problem Sept., 22
Separate sewers aid plant operation Sept., 104
The Kansas digester Sept., 116
A hurricane-proof pumping station Oct., 29
Shock absorbers protect chlorination system Oct., 29
Sewage treatment for the future Oct., 98
Smoke out those sewer leaks Oct., 145
Modern sewage - service charges—Part I Oct., 163
Let's have a picnic—at the sewage plant Nov., 25
St. Louis' infiltration-proof sewers Nov., 25
Largest biofilter plant in the East Nov., 96
Modern sewer-service charges—Part II Nov., 171
This movie stars a commission Dec., 25
Six-year $46,000,000 sewage program Dec., 25
Separate sewer department in small city Dec., 76
Frothing faucets Dec., 96
Wrens and worms aid sewage plant Dec., 100
Modern sewer-service charges—Part III Dec., 142

SNOW REMOVAL
Salt-calcium chloride clears icy streets faster Jan., 29
Snow fighters on three shifts Jan., 80
Converted buses attack icy streets Feb., 41
Heavy snow changes plowing policy Feb., 41
Snow removal a year-round project Feb., 90
Next year's snow-removal program Mar., 7
Snow-melting truck June, 197
New cars resist salt corrosion Aug., 27
Create a snow plan and stick to it Aug., 108
Charge for the service Sept., 24
Westmount will melt its snow Sept., 24
New York City's mobile snow melter Sept., 24
The answer to driveway complaints Oct., 31
We learned from experience Oct., 104
Five men versus 45 minutes Nov., 29
The cost of plowing and removing snow Nov., 89
Motor patrols attack the hills Dec., 14
Loading snow on narrow streets Dec., 14
Contract snow plowing Dec., 86

STREET CLEANING
One sweeper, two crews Jan., 29
Street cleaning schedules Jan., 29
Street cleaning costs Jan., 29
Quicker service—cleaner streets Mar., 36
A clean sweep for Rye Apr., 27
Mechanical rival Apr., 27
Change in brooms cut sweeping costs May, 33
More "see power" for New York May, 33
Street cleaning is more than sweeping May, 137
Alleys are clean in Santa Monica June, 49
Street cleaning means flushing too June, 29
Daily flushing cleans streets July, 20
Street cleaning in a 24-hour-a-day city July, 93
Brush collection on a call basis Aug., 22
Street cleaning starts strong Aug., 96
South Bend vacuums for light litter Sept., 189
Durability of street-broom fiber Oct., 31
Try this flusher for size Nov., 29

STREET CONSTRUCTION AND MAINTENANCE
Oiling unimproved streets Jan., 9
Rattle-proof street gratings Jan., 9
Street-sewer maintenance practices Jan., 100

Issue & Page
A handy answer to odd-lot paving Feb., 19
Logical asphalt pavement design Feb., 19
$62,000 saved in one year Feb., 77
Power mower cleans expansion joints Mar., 10
Slurry-seal cost data Mar., 10
Asbestos asphalt in Atlanta Mar., 93
Good streets for little money Mar., 113
Winter concreting idea Mar., 114
Madison plans its street types Mar., 166
"Revolutionary" soil cement proved by time Apr., 9
Asphalt-paving correctives Apr., 9
We reconstruct minor streets Apr., 76
Stretching the paving dollar Apr., 137
Add a boom to a pick-up May, 13
Paved streets are still cheaper May, 13
Effects of salt on asphalt paving May, 13
Paving by petition May, 97
City-utility coordinating council June, 19
Aluminum bridges June, 19
Soil-cement street program June, 104
New streets June, 126
Polymer blend improves asphalt July, 11
Subdivision street requirements July, 11
New type of seal coating July, 97
Circular ramp conserves space Aug., 9
Seal coating accentuates the positive Aug., 9
Paving is the mayor's business Aug., 87
Asphalt program goes electric Sept., 19
Thin coatings stop spalling Sept., 107
Joint venture gets street paved Sept., 171
We build streets of oyster shells Oct., 11
Street-maintenance costs Oct., 11
New film shows soil-cement tests Oct., 38
Short-term, long-term street aid Oct., 114
Our cure for street headaches Oct., 179
Asbestos additive improves pavements Nov., 9
Mid-winter pot-hole patching Nov., 95
A five-ton crane is a handy thing Nov., 110
Don't knock rock Dec., 9
Ben Franklin, street-paving pioneer Dec., 9
Austin's compact paving-repair unit Dec., 78

TRAFFIC CONTROL
Modern transit for Los Angeles Jan., 88
Doing something for commuters Jan., 94
Parking in Seattle Jan., 107
1975 urban traffic Jan., 110
On neutral ground Jan., 110
For better metropolitan transport Jan., 137
Pre-programming 50,000 traffic signals Feb., 88
Channeling of Oakland's intersections Feb., 110
Coins pay off revenue bonds Feb., 115
Lubbock's loop Feb., 115
Court okays billboard seizure Mar., 87
Report on plastic markings Mar., 122
It counts vehicles and regulates lights Mar., 125
Traffic needs dictated in the field Mar., 125
Doubles striping ability Mar., 125
Modern controllers Apr., 111
Memphis transit now city owned Apr., 112
Latest on pavement markings Apr., 115
Sioux City's semi-actuated signals May, 12
The commuter problem May, 149
Eye keeps tab on transit riders May, 161
A few words on traffic engineering June, 140
Modern rapid-transit system July, 123
6,400 miles of traffic lines July, 126
Plans for traffic signal systems July, 126
The picture proves it Aug., 121
Bus-helicopter for commuter service Aug., 123
New Rochelle's striping policy Aug., 125
New transit institute Aug., 125
Traffic cones show eight-ton rebound Sept., 127
A master traffic-controlled system Sept., 129
Four multi-dial systems integrated Sept., 131
Traffic paint test in Milwaukee Sept., 133
The auto gets a defender Sept., 133
San Francisco answers questions Sept., 133
A third two-way radio system Sept., 151
3.4% more driver licenses in 1960 Sept., 199
Law aids drunk-driver test Sept., 215
City-operated moving sidewalk Oct., 91
For tight-fit bridge traffic Oct., 127
Cleveland deodorizes diesel exhaust Oct., 128
Porcelain guard rail Oct., 133
Monorail—San Francisco's opinion Oct., 133
Cincinnati paints traffic lines Nov., 100
One street—two intersection problems Nov., 135
Measuring skidmarks Nov., 137
Top traffic measures in Rochester Nov., 138
Grooved pavement traffic stripes Nov., 141
Traffic problems head for the suburbs Nov., 141
Fresno starts city bus system Nov., 199
Accident-prevention board provides three benefits Dec., 90
We "button down" good traffic practices Dec., 105
Pavement-edge markings reduce accidents Dec., 109

Issue & Page
Aberdeen scooter-patrols parking violators Dec., 111
Curb parking is an acute problem Dec., 111
Expressway has reversible center lane Dec., 113

URBAN REDEVELOPMENT AND RENEWAL
Terre Haute's urban-renewal plan Feb., 106
Condominium urban renewal June, 205
Nashville upgrades Capitol Hill June, 207
Small-city urban renewal Nov., 18
California's first urban-renewal project Nov., 30

WATER SUPPLY AND TREATMENT
Precious water Jan., 18
Bills computed electronically Jan., 18
Two-step pre-treatment plant Jan., 90
The ideal city tractor Jan., 94
Repairs to 100 breaks in four days Jan., 97
Additive to reduce heat generation Jan., 104
More than just a water tower Jan., 131
"One-pump" filter plant Jan., 145
Tank design cuts costs three ways Feb., 27
13 steps to cleaner surface water Feb., 32
Trouble-shooting pump Feb., 32
Water project pumps life into city Feb., 80
Keep out fish electrically Feb., 95
Mobile meter repairmen Feb., 102
Polygraph okays water company purchase Feb., 135
De-salted sea water is no bargain Feb., 140
New officers for AWWA Mar., 32
Official emblem for operators Mar., 32
Universal metering Mar., 85
Water supply to rise in California, Florida Mar., 108
More water plant in half the space Mar., 149
Second longest prestressed span Mar., 159
Clear water under all conditions Mar., 169
Solves color and turbidity problem Mar., 173
No forecast for future water demand Mar., 180
How Peru's water system differs Apr., 25
Everything new but the supply Apr., 73
Water storage and flood control Apr., 98
The future must rule water-supply program Apr., 147
Pipeline water hammer May, 18
Water from the sea at Freeport May, 34
Electronic sentinel monitors river quality May, 34
Water meters stretch resources May, 34
It pays to keep quiet May, 91
Do it yourself and pay as you go May, 105
Three sources of water supply May, 112
Old-fashioned but still good May, 163
Water-supply trends June, 7
A boost in raw water for Detroit June, 25
Philadelphia spruces up old water mains June, 25
Sea-water conversion plant June, 25
New dimensions in water supply June, 99
AWWA stresses research, education June, 102
Water billed sensimatically June, 103
The Union water system June, 116
Good records for distribution systems June, 128
Unusual but proved waterworks features June, 165
Our future was at stake June, 199
Answers to water-works problems July, 33
Underwater line feeds a dozen towns July, 94
Water for your grandchildren July, 113
Upgrade top water-works personnel July, 149
Major distribution valves replaced July, 153
An easy-to-use storage building Aug., 38
Florida's best Aug., 38
Better water and more of it Aug., 90
Pittsburgh replaces a pipeline Aug., 106
Big results for little money Aug., 114
No difference in taste Aug., 153
Largest elevated tank Sept., 28
Support for water-works expansion Sept., 28
Chemicals in liquid form only Sept. 93
Selecting, installing water - works pumps Sept., 109
Remote reading system for meters Sept., 177
The water picture in the U.S.A. Sept., 181
Stainless-steel well screens Oct., 27
Water rates for construction Oct., 27
High-rate filters Oct., 93
Selecting, installing waterworks pumps—Part II Oct., 119
Neoga's water tank first of its kind Nov., 33
Chemicals reduce water requirements Nov., 33
No chance of water shortage here Nov., 92
No more treatment than necessary Nov., 108
How to select and install waterworks pumps Nov., 117
A mushroom "grows" into the sky Dec., 23
116-mgd plant for Montevideo, Uruguay Dec., 23
One operator does everything Dec., 72
A cathodically protected city Dec., 83
Frothing faucets Dec., 96

Index to places

Issue & Page

- **ABERDEEN, S. D.**
  - Scooter-patrols parking violators — Dec., 111
- **ABILENE, TEXAS**
  - New streets — June, 126
  - Abilene cuts collection costs — Nov., 27
  - Health club for fitness program — Nov., 195
- **ALABAMA**
  - Alabama towns get brighter — July, 131
- **ALBANY, N. Y.**
  - Five to eight footcandles downtown Nov., 114
- **ALBUQUERQUE, N. M.**
  - Combined fire-disaster truck — Sept., 33
- **ALHAMBRA, CALIF.**
  - More about Alhambra's median strip Feb., 122
- **ALLEGHENY COUNTY, PA.**
  - Pay rises in the Pittsburgh area — Apr., 162
- **ALTON, ILL.**
  - Costs cut on insurance program — May, 153
- **AMARILLO, TEXAS**
  - By-products cut treatment cost — May, 23
- **AMITYVILLE, N. Y.**
  - Aluminum bridges — June, 19
- **ANAHEIM, CALIF.**
  - Fire department on television — Sept., 33
- **ANCHORAGE, ALASKA**
  - The answer to driveway complaints — Oct., 31
- **ANDERSON, S. C.**
  - Alarms simplified in Anderson — Jan., 23
- **ASBURY PARK, N. J.**
  - City officials honored — Jan., 26
  - More revenue, same parking meters — Jan., 83
- **ASHEVILLE, N. C.**
  - Safer and more pleasant in Asheville Nov., 143
- **ASHTABULA, OHIO**
  - Let's have a picnic—at the sewage plant — Nov., 25
- **ATLANTIC CITY, N. J.**
  - Landfill provides garage site — July. 25
- **ATTLEBORO, MASS.**
  - Save with mechanized leaf pick-up — Apr., 29
- **AUGUSTA, KAN.**
  - Honored by Freedoms Foundation — Sept., 45
- **AURORA, COLO.**
  - Ground garbage affects sewerage — July, 108
- **AUSTIN, TEXAS**
  - Austin wins safety award — July, 165
  - Austin's compact paving-repair unit Dec., 78
- **AVONDALE, ARIZ.**
  - Avondale marks advances — Feb., 23
- **BALDWIN PARK, CALIF.**
  - Precious water — Jan., 18
- **BALTIMORE, MD.**
  - A dousing for harbor fires — May, 27
  - A third two-way radio system — Sept., 151
- **BALTIMORE COUNTY, MD.**
  - Street cleaning starts strong — Aug., 96
- **BAYONNE, N. J.**
  - Totos fight fires on retired trucks — Nov., 34
- **BEEVILLE, TEXAS**
  - Automation plus indoctrination — Dec., 91
- **BERKELEY, CALIF.**
  - We reconstruct minor streets — Apr., 76
- **BERLIN, WIS.**
  - Charge for the service — Sept., 24
- **BETHANY, MO.**
  - Power installation brings savings — June, 185
- **BETHLEHEM, PA.**
  - A do-it-yourself Christmas tree — Dec., 71
- **BEVERLY HILLS, CALIF.**
  - It pays to keep quiet — May, 90
  - 400-car parking unit for 23% less — June, 140
  - New parking-structure design — Dec., 80
- **BIRMINGHAM, ALA.**
  - Landfill proven under fire — May, 94
- **BLAINE, MINN.**
  - A mushroom "grows" into the sky — Dec., 23
- **BLOOMINGTON, MINN.**
  - Bills computed electronically — Jan., 18
  - Bloomington lighted by plan — Jan., 115
  - Frothing faucets — Dec., 96
- **BLUEFIELD, W. VA.**
  - Blueprint for Bluefield, W. Va. — May, 141
- **BOSTON, MASS.**
  - Accounting with electronic computer May, 104
- **BREVARD COUNTY, FLA.**
  - Solving the mosquito problem — Aug., 93
- **BRIDGEPORT, CONN.**
  - Distribution valves replaced — July, 153
- **BRINKLEY, ARK.**
  - Refuse improvement gains customers May, 29
- **BUCKS COUNTY, PA.**
  - Six suburbs form cooperating group June, 229
- **BUFFALO, N. Y.**
  - Buffalo tests plastic conduit — Sept., 138
  - Remote reading system for meters — Sept., 177
- **BURBANK, CALIF.**
  - Compact cars cut California costs — Feb., 82
  - City Hall annex is H-bomb-proof — Sept., 112
- **CALIFORNIA**
  - Plans metropolitan districts — May, 111
- **CALEXICO, CALIF.**
  - California's urban-renewal project — Nov., 30
- **CAMAS, WASH.**
  - Meter enforcement helps police — Apr. 112
- **CANTON, OHIO**
  - Microwave pole tops city hall — July, 26
  - Stainless-steel well screens — Oct., 27

Issue & Page

- **CARLISLE, PA.**
  - Cities can compete successfully — Feb., 97
- **CARTHAGE, MO.**
  - One roof for two-plant system — Jan., 95
- **CASPER, WYO.**
  - Residential mercuries — Dec., 117
- **CHARLESTON, S. C.**
  - The practical side of city purchasing — Nov., 157
- **CHICAGO, ILL.**
  - Tallest apartment buildings — May, 103
  - Locates electric ground faults — May, 109
  - Chicago expands its Burnham Plan — Sept., 102
  - A "crossband" police radio system Oct., 171
  - Grooved pavement traffic stripes — Nov., 141
- **CICERO, ILL.**
  - Modern lights on every street — Feb., 117
  - Cicero's aluminum swimming pool Dec., 89
- **CINCINNATI, OHIO**
  - How to manage municipal personnel May, 117
  - It pays to shop around — Sept., 185
  - Paints traffic lines on Sunday — Nov., 100
  - How to select and install water-works pumps — Nov., 117
- **CLAYTON, MO.**
  - Precast curbs for sandboxes — Sept., 37
- **CLEVELAND, MINN.**
  - All the streets are fluorescent — Apr., 125
- **CLEVELAND, OHIO**
  - How we paint steel structures — May, 172
  - Cleveland's mall is now lighted — June, 147
  - Cleveland's square is a super-moon — July, 135
  - Cleveland's police ambulances — Sept., 124
  - More light on the field — Sept., 137
  - Deodorizes diesel exhaust — Oct., 128
  - Cleveland's city hall lights up — Nov., 151
  - Cleveland's revolving fund — Nov., 178
- **COLMAN, S. D.**
  - Establishes city electric system — May, 146
- **COLUMBUS, NEB.**
  - More swimmers per dollar — June, 120
- **COLUMBUS, OHIO**
  - Multidial signal systems integrated — Sept., 131
- **CONNECTICUT**
  - Towns improve personnel management — May, 18
- **CORAL GABLES, FLA.**
  - A fire station needs color — Dec., 92
- **CORNING, N. Y.**
  - Create a snow plan and stick to it Aug., 108
- **COSTA MESA, CALIF.**
  - Annual Report is calendar — Jan., 132
- **COUNCIL BLUFFS, IOWA**
  - Oiling unimproved streets — Jan., 9
  - Mobile meter repairmen — Feb., 103
  - Motor patrols attack the hills — Dec., 14
- **COVINGTON, VA.**
  - Stretches the paving dollar — Apr., 137
- **CULPEPER, VA.**
  - Water project pumps life into city — Feb., 80
- **CULVER CITY, CALIF.**
  - Street cleaning schedules — Jan., 29
- **DALLAS, TEXAS**
  - The Dallas fire department at 75 — July, 26
- **DEARBORN, MICH.**
  - Fire-fighting scout cars — June, 47
  - City makes low-cost movie — Oct., 151
  - Easy starts on cold mornings — Nov., 178
- **DECATUR, ALA.**
  - A cathodically protected city — Dec., 83
- **DECATUR, ILL.**
  - New brooms cut sweeping costs — May, 33
  - A year-round park program — Aug., 111
- **DELAWARE COUNTY**
  - Three incinerators solve problem — Aug., 102
- **DENISON, TEXAS**
  - Limited-purpose annexation — June, 189
- **DENVER, COLO.**
  - The picture proves it — Aug., 121
  - Bus-helicopter for commuters — Aug., 123
  - Asphalt program goes electric — Sept., 19
  - We "button down" good traffic practices — Dec., 105
- **DETROIT, MICH.**
  - Use our marina! — Jan., 98
  - A boost in raw water for Detroit — June, 25
  - New dimensions in water supply — June, 99
  - Safety-conscious convention hall — June, 173
- **DOYLESTOWN, PA.**
  - Circular courthouse for site — Aug., 116
- **DUBUQUE, IOWA**
  - Better business and less crime — May, 133
  - Water rates for construction — Oct., 27
- **DUNBAR, W. VA.**
  - Sewage plant features pre-fab lab — June, 213
- **DUNCAN, OKLA.**
  - Water storage and flood control — Apr., 98
- **DUNKIRK, N. Y.**
  - New equipment for an old plant — May, 92
- **DUNN, N. C.**
  - Do it yourself and pay as you go — May, 105
- **DURHAM, N. C.**
  - Defeats city-county government — Apr., 163
- **EAST McKEESPORT, PA.**
  - A diesel-powered pumper — Sept., 144
- **EAST LANSING, MICH.**
  - Parking program with a future — May, 120

Issue & Page

- **EAST ORANGE, N. J.**
  - Put a better bite — Sept., 179
- **EAST ST. LOUIS, ILL.**
  - Honored by Freedoms Foundation — Sept., 45
- **EL PASO, TEXAS**
  - A handy answer to odd-lot paving — Feb., 19
  - Landfill salvage nets $11,639 — Sept., 31
- **ENGLEWOOD, N. J.**
  - $176.48 plants a tree — May, 31
- **ERIE, PA.**
  - Parking meters are profitable — Oct., 92
  - One street—two intersection problems — Nov., 135
- **ESCONDIDO, CALIF.**
  - Good street lighting — Oct., 136
- **ESSEX COUNTY, ONTARIO, CANADA**
  - The union water system — June, 116
- **EVANSTON, ILL.**
  - Prescription for ailing downtowns — July, 106
  - Measuring skidmarks — Nov., 137
- **FAYETTEVILLE, N. C.**
  - How a city is aiding a new college Sept., 118
- **FERGUSON, MO.**
  - Short-term, long-term street aid — Oct., 114
- **FLORENCE, S. C.**
  - Municipal group insurance — Dec., 93
- **FLORIDA**
  - The best way to kill mosquitoes — Jan., 141
  - Pump discharges 466,900 gpm — June, 31
  - Florida's Best — Aug., 38
- **FLORIDA KEYS**
  - Repairs to 100 breaks in four days — Jan., 97
- **FOND DU LAC, WIS.**
  - Offstreet parking program — Oct., 131
- **FORT COLLINS, COLO.**
  - Paving by petition — May, 97
- **FORT LAUDERDALE, FLA.**
  - Purchasing builds up — May, 167
  - No more night life for insects — Sept., 22
  - Pint-sized jet-powered fireboat — Nov., 36
  - Waterways need continuous maintenance — Nov., 102
- **FORT WORTH, TEXAS**
  - Fort Worth study shows growth need May, 171
- **FREDERICKSBURG, VA.**
  - Try a citizens' band radio system — Dec., 129
- **FREEPORT, TEXAS**
  - No difference in taste — Aug., 153
  - Water from the sea — May, 34
- **FRESNO, CALIF.**
  - Physical exams benefit all — May, 176
  - Fresno starts city bus system — Nov., 201
- **GARDEN GROVE, CALIF.**
  - Polygraph okays company purchase — Feb., 135
- **GEORGIA**
  - Two-city-planning training courses — Apr., 22
  - University city-planning course — May, 146
- **GLENVILLE, N. Y.**
  - Town and village teamwork — May, 108
- **GOTHENBURG, SWEDEN**
  - Incentive system cuts costs — Sept., 31
- **GRAND JUNCTION, COLO.**
  - Brush chipper pays for itself — Dec., 20
- **GRAND RAPIDS, MICH.**
  - Planned street lighting — Sept., 137
  - Downtown Grand Rapids to compete Dec., 94
- **GRAYSVILLE, ALA.**
  - Posts payments; buys tape analysis — Feb., 93
- **GREAT BRITAIN**
  - Britons discard their "dust bins" — Aug., 31
- **GREELEY, COLO.**
  - County building used as ice rink — Aug., 99
- **GREENVILLE, S. C.**
  - Daily flushing cleans streets — July, 20
- **GROSSE POINTE PARK, MICH.**
  - First stage of marina completed — July, 92
- **GROSSE POINTE WOODS, MICH.**
  - Add a boom to a pick-up — May, 13
- **HAHIRA, GA.**
  - Plan or perish — Nov., 181
  - New type of wage-salary plan — Dec., 133
- **HALES CORNERS, WIS.**
  - Rubber gasket controls infiltration — Apr., 83
- **HAMILTON COUNTY, OHIO**
  - County police like it — Jan., 93
- **HAMMOND, IND.**
  - Doubled refuse pick-up costs less — Apr., 102
- **HARRISONBURG, VA.**
  - Good planning brings benefits — Apr., 130
- **HARTFORD, CONN.**
  - Sewer-ordinance inequities — May, 23
  - Center to study urban problems — June, 193
  - Air-conditioning utility for project — June, 210
  - Records meetings electronically — Oct., 122
- **HATTIESBURG, MISS.**
  - No chance of water shortage here — Nov., 92
- **HAYS, KAN.**
  - Wrens and worms aid sewage plant — Dec., 100
- **HAZEL PARK, MICH.**
  - More efficient weed spraying — Sept., 92
  - Five men versus 45 minutes — Nov., 29
- **HELLERTOWN, PA.**
  - Running a small police force — July, 112

INDEX TO PLACES—(Continued)

Issue & Page

HIALEAH, FLA.
Hialeah opens giant pool ... Aug., 29
HILLSIDE, N. J.
Small community 2-way police radio Nov., 36
HOLLAND, MICH.
Tulip time is light-up time ... June, 151
HOLLYWOOD, CALIF.
Now one of the world's brightest ... Apr., 121
HOLLYWOOD, FLA.
Plastics to the rescue ... Apr. 36
Golf course is a money-maker ... May, 31
Street-maintenance costs ... Oct., 11
Preserve old trees in new subdivisions ... Nov., 112
One tap of the hammer ... Nov., 138
HOPE, ARK.
More light for Hope ... Oct., 135
HOPKINSVILLE, KY.
Relighting detailed ... May, 129
Planning program brings results ... Aug., 100
HOUMA, LA.
Biggest power-plant enlargement ... Sept., 157
HOUSTON, TEXAS
Street lighting continues ... Apr., 117
Subdivision lighting ... May, 133
HUNTSVILLE, TEXAS
No more treatment than necessary ... Nov., 108
HYATTSVILLE, MD.
Prowlers or municipal employees ... Aug., 104
ILLINOIS
Fight to keep police-firemen ... July, 102
INDEPENDENCE, MO.
Unusual water-works features ... June, 165
INDIANAPOLIS, IND.
Park maintenance fundamentals ... May, 100
City-utility coordinating council ... June, 19
Records for distribution systems ... June, 128
Attention to school safety ... June, 137
INGLEWOOD, CALIF.
Mercuries modernize street ... June, 144
Small vehicles aid park departments Dec., 20
IOWA
Parking meters in Iowa ... Aug., 123
IOWA CITY, IOWA
Circular ramp conserves space ... Aug., 9
ISLIP, N. Y.
Christmas trees prevent erosion ... Apr., 78
ITHACA, N. Y.
Ithaca dredges for a marina ... Sept., 120
JACKSON, MICH.
Water billed sensimatically ... June, 103
JACKSON, TENN.
Street cleaning means flushing too ... June, 49
KANSAS
Pavement-edge markings reduce accidents ... Dec., 109
KENNEWICK, WASH.
Tank design cuts costs three ways ... Feb., 27
KEY WEST, FLA.
Light for fishing ... Nov., 147
KINGSTON, N. Y.
Cost of plowing and removing snow Nov., 89
KISSIMMEE, FLA.
Support for utility program ... Apr., 103
LAKE CHARLES, LA.
A hurricane-proof pumping station ... Oct., 29
LAKE JACOMO, MO.
Park shelters win award ... June, 33
LAKE TAHOE, CALIF.
Low-slung, all-wheel-drive ... Sept., 193
LAKEWOOD, CALIF.
New type of wage-salary plan ... Dec., 133
LAKE WORTH, FLA.
Mercuries rising in Lake Worth ... Apr., 125
Vanilla overcomes odor problem ... Sept., 22
LAS VEGAS, NEV.
Street cleaning ... July, 93
LA VERNE, CALIF.
Night parking prohibited ... May, 27
LINCOLN, NEB.
Child-safe storm-water inlets ... Jan., 21
Compact repair cart ... June, 139
LOS ALTOS, CALIF.
Learns what the people want ... Sept., 155
LOS ANGELES, CALIF.
Modern transit proposed ... Jan., 88
Plan now for 1975 urban traffic ... Jan., 88
Cities, county cooperate ... Jan., 146
A big bypass ... June, 31
Deer repellent protects parks ... June, 33
A sweeping start ... July, 20
Fire protection tips for parks ... Aug., 29
Six-year $46,000,000 sewerage program ... Dec., 25
LUBBOCK, TEXAS
Lubbock's loop ... Feb., 115
Alternate bidding is worthwhile ... May, 110
Filament for dwellings, mercury for business ... Nov., 151
MADISON, WIS.
Wright-designed center ... Apr., 22
MANKATO, MINN.
Converted buses attack icy streets ... Feb., 41
Separate sewers aid plant ... Sept., 104
MAPLE HEIGHTS, OHIO
Sewer cleaning by contract pays ... July, 23
MARSHFIELD, WIS.
Faster, safer, more efficient ... Dec., 101

Issue & Page

MARTINSVILLE, VA.
Light doubled and redoubled ... Feb., 120
MARYSVILLE, CALIF.
Children swing bond election ... Aug., 149
MASSACHUSETTS
Snow removal a year-round project ... Feb., 90
McKINNEY, TEXAS
Joint venture gets street paved ... Sept., 171
McPHERSON, KAN.
"Smoke out" those sewer leaks ... Oct., 145
MELBOURNE, FLA.
It smells or does it? ... July, 23
MEMPHIS, TENN.
More service at less cost ... Feb., 35
Memphis transit now city-owned ... Apr., 112
Substation fire-alarm system ... Sept., 193
MENOMONIE, WIS.
"Y" the difference ... Oct., 147
MERRICK, N. Y.
Refuse needs better control ... Aug., 113
MIAMI, FLA.
The best in the U. S. ... Feb., 31
A light every 120 feet ... Apr., 121
Wins award for hiring handicapped ... May, 25
Miami gets ultra-modern jail ... July, 107
City communications keep up to date July, 117
Elevator parking ... July, 129
Putting on the dog ... Aug., 33
First-class city-wide lighting ... Aug., 126
Miami Airport's fire defence ... Oct., 25
County saves on legal costs ... Sept., 108
No fishing—except for children ... Oct., 33
How Miami's Metro purchases ... Oct., 125
Makes "crash" trash pick-up drive Dec., 33
Dade County re-indorses Metro ... Dec., 150
MIAMI BEACH, FLA.
Coins pay off revenue bonds ... Feb., 115
Mall gets surrey transit ... Sept., 197
MICHIGAN
Electronic hotfoot eliminates bugs ... July, 103
MIDDLESEX COUNTY, N. J.
Shock absorbers help chlorination ... Oct., 29
MILWAUKEE, WIS.
Golf course as tree nursery ... Jan., 89
Intergovernmental cooperation ... Feb., 107
Public purchasing executives ... Feb., 129
Everything new but the supply ... Apr., 73
All-night parking on streets ... July, 125
Gasoline "shrinkage" drops ... Aug., 153
Traffic paint test in Milwaukee ... Sept., 133
Sewage treatment for the future ... Oct., 98
Police-car purchasing improved ... Oct., 116
Central reproduction division ... Oct., 116
Identical salt bids go in Milwaukee Nov., 160
MINNEAPOLIS, MINN.
Garbage grinding; sewage strength ... Feb., 25
Seal coating shows the positive ... Aug. 9
Versatility and resourcefulness ... Sept., 7
We rent our equipment ... Sept., 89
Four footcandles downtown ... Sept., 143
Minneapolis' new library ... Nov., 120
MODESTO, CALIF.
Appoints a deputy city manager ... Feb., 143
Utility, simplicity, charm ... May, 107
Citizen committees prove best MPR ... Sept., 147
MONTEVIDEO, URUGUAY
116-mgd. plant ... Dec., 23
MOORHEAD, MINN.
Three sources of water supply ... May, 112
MOUNT HOLLY, N. J.
Mount Holly's refuse program ... July, 118
MOUNT VERNON, N. Y.
Panels cover city hall steeple ... Sept., 209
NASHVILLE, TENN.
Redistricting challenges legislature ... Feb., 37
Upgrades city's Capitol Hill ... June, 207
Computer contract ... Aug., 143
Tries new pedestal lighting pole ... Oct., 141
Metro area to get air survey ... Oct., 161
NEOGA, ILL.
Neoga's water tank first of its kind Nov., 33
NEWARK, N. J.
Additive reduces heat generation ... Jan., 104
New times—better police ... June, 119
Transistorized-radio network ... July, 104
Better water and more of it ... Aug., 90
NEW BRITAIN, CONN.
Centralized municipal purchasing ... June, 195
NEW BRIGHTON, MINN.
New Brighton's rescue unit ... Aug., 33
NEWBURGH, N. Y.
Something for everyone ... May, 27
The Newburgh "revolution" ... Aug., 7
Courtesy ticket is a reminder ... Aug., 31
NEW JERSEY
Updates municipal and county laws Apr., 138
Light for jug handles ... Dec., 123
NEW ORLEANS, LA.
We build streets of oyster shells ... Oct., 11
NEWPORT, ARK.
Paving is the mayor's business ... Aug., 87
NEWPORT BEACH, CALIF.
Electrical voting speeds meeting ... Feb., 98
NEW ROCHELLE, N. Y.
New Rochelle's striping policy ... Aug., 125
New downtown coming ... Oct., 103
NEWTON, N. J.
Swim all season for $12 a family ... Feb., 83

Issue & Page

NEW YORK
Planning seminars ... Feb., 94
Underwater line feeds twelve towns July, 94
NEW YORK, N. Y.
Rattle-proof street gratings ... Jan., 9
Manhattan gets a municipal garage ... Jan., 82
America's coats of arms displayed ... Jan., 96
Aquarium drills salt-water wells ... Feb., 28
Pre-programming traffic signals ... Feb., 88
Colored refuse containers ... May, 29
More "see-power" for New York ... May, 33
The commuter problem ... May, 149
Public housing spurs community ... May, 161
Lighting for a 750-car garage ... June, 124
"Salute to the Seasons" ... June, 153
Studies a snow-melting truck ... June, 197
Vandal-proof parking meters ... Aug., 125
Underground parking for New York Aug., 151
New York City's mobile snow melter Sept., 98
Police cars get new insignia ... Sept., 106
Hammermill grinds lumber ... Oct., 22
Fire department station wagons ... Oct., 25
NIAGARA COUNTY, N. Y.
Underwater line feeds twelve towns ... July, 94
NORFOLK, VA.
Siphon system cuts sewerage costs ... Jan., 103
NORMANDY, MO.
Mid-winter pot-hole patching ... Nov., 95
NORTH KANSAS CITY, MO.
One of the five brightest ... Sept., 135
NORTH PROVIDENCE, R. I.
Modern controllers ... Apr., 111
NORTH ST. PAUL, MINN.
In-service training for efficiency ... June, 222
NORWALK, OHIO
Two-in-one utility truck ... June, 114
OAKLAND, CALIF.
A sewer goes in a sewer ... Jan., 77
Street-sewer maintenance practices ... Jan., 100
Channelization for intersections ... Feb., 110
OHIO
Parking meters in Ohio ... Feb., 113
Electronic sentinel monitors river ... May, 34
OKLAHOMA
What cities want in city managers ... July, 43
Two-way radio for highway vehicles Aug., 33
OKLAHOMA CITY, OKLA.
Cleaning is more than sweeping ... May, 157
Don't "suburb" me in ... June, 111
Motor equipment in Oklahoma City July, 96
OLIVETTE, MO.
Swimming pool ordinances ... Oct., 33
OLYMPIA, WASH.
Pleased with aluminum standards ... July, 137
ORLANDO, FLA.
Selecting top-grade city employees ... Jan., 73
Creating 1,000 parking spaces ... Apr., 106
OSHKOSH, WIS.
Traffic cones show a rebound ... Sept., 127
OWATONNA, MINN.
"Good Parks" is our slogan ... Apr., 89
PALMYRA, N. J.
For tight-fit bridge traffic ... Oct., 127
PATERSON, N. J.
A thorough clean-up campaign ... June, 115
PAYETTE, IDAHO
Payette glitters at night ... Jan., 117
PENNSYLVANIA
You could call this alumination ... Feb., 122
PEORIA, ILL.
Sanitary landfill by contract ... Feb., 104
PERU
How Peru's water system differs ... Apr., 25
PHILADELPHIA, PA.
Two-step pre-treatment plant ... Jan., 90
Doing something for commuters ... Jan., 94
Interstate refuse disposal ... Feb., 35
Heavy snow changes plowing policy Feb., 41
Philadelphia's smog detector ... Feb., 94
Philadelphia story ... Feb., 149
Legal aid for historic building ... Apr., 129
City spruces up old water mains ... June, 25
"Skid Row" mapped for clean-up ... June, 130
Recover rigged-bid damages ... June, 177
Philadelphia's long-range plans ... July, 89
Fast figuring of parking charges ... July, 120
Upgrade top water-works personnel ... July, 149
Adds to its alley-cat fleet ... Oct., 22
Philadelphia raises salaries ... Oct., 108
Ben Franklin, street-paving pioneer ... Dec., 9
Big city P.R. divisions promotions ... Dec., 137
PHOENIX, ARIZ.
Refuse composting in Phoenix ... Apr., 36
Electronic city surveying ... Apr., 96
How Phoenix makes 12,000 purchases July, 143
Find fun in Phoenix ... Aug., 145
Equipment works more, operates for less ... Oct., 97
Phoenix turns auctioneer ... Dec., 102
PICO RIVERA, CALIF.
Youngest city—oldest city hall ... Oct., 169
Don't knock rock ... Dec., 9
PITTSBURGH, PA.
Biggest dome in the world ... Feb. 99
Replaces a problem pipeline ... Aug., 106
Fireman recruit training ... Sept., 161
Punched cards record everything ... Nov., 106

INDEX TO PLACES—(Concluded)

Issue & Page

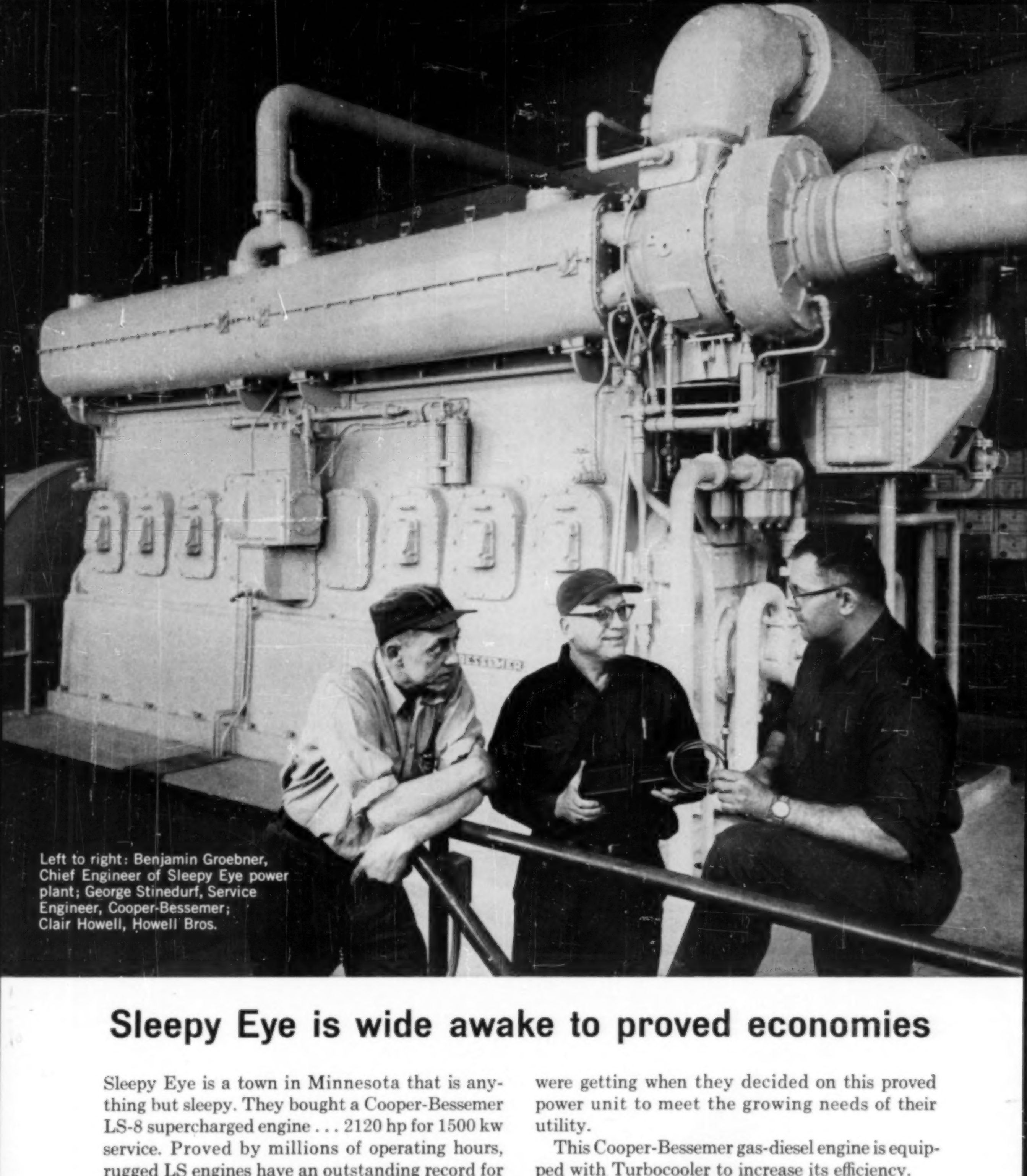
PLAINS TOWNSHIP, PA.
  Township to radio car ---------- Feb., 31
PLEASANT CORNERS, PA.
  A porcelain guard rail ---------- Oct., 133
POLAND, N. Y.
  Unconventional but workable ------ Feb., 25
POMPANO BEACH, FLA.
  Polaroid cuts costs for mug shots---- Oct., 109
PORTLAND, ME.
  Uses fluorescents and mercuries ---- Nov., 144
  Smallest public housing project ---- Dec., 99
PORTLAND, ORE.
  What a good auditorium needs ---- Nov., 165
  Small vehicles aid park departments Dec., 20
  Portland's cab-forward fire trucks--- Dec., 31
PRATT, KAN.
  The Kansas Digester ---------- Sept., 116
PRINCETON, N. J.
  Revolving grates ---------- June, 109
PROVINCETOWN, MASS.
  Loading snow on narrow streets ---- Dec., 14
RAMSEY, N. J.
  Business machines for water-works-- Sept., 165
READING, PA.
  50-year-old plans read like new ---- Oct., 183
REDDING, CALIF.
  One operator does everything ------ Dec., 72
REDWOOD CITY, CALIF.
  Downtown is safer ---------- Oct., 139
RICHMOND, VA.
  Richmond's "operation share" ----- May, 139
  Condominium urban renewal ------ June, 205
RIDGEWAY, PA.
  Safer streets in Ridgway ---------- May, 127
ROCHESTER, N. Y.
  Turbine-powered pumping engine --- Jan., 23
  Fire dispatching ---------- June, 47
  Top traffic measures in Rochester-- Nov., 138
ROCKVILLE, MD.
  701 to the rescue ---------- Apr., 91
  Our cure for street headaches ------ Oct., 179
ROCKY MOUNT, N. C.
  A cleaner city through teamwork--- Sept., 113
RYE, N. Y.
  A clean sweep for Rye ---------- Apr., 27
SACRAMENTO, CALIF.
  Subdivision street requirements ----- July, 11
  Deep lots in Sacramento ---------- July, 116
  Largest elevated tank ---------- Sept., 28
  Rifle range makes a good neighbor-- Nov., 34
  Accident-prevention board provides three benefits ---------- Dec., 90
SAGINAW, MICH.
  Keeping Saginaw green ---------- Nov., 116
ST. LOUIS, MO.
  Police dog program in St. Louis --- Apr., 35
  St. Louis' infiltration-proof sewers Nov., 25
  Expressway has reversible center lane Dec., 113
ST. PAUL, MINN.
  The ideal city tractor ---------- Jan., 94
  Garbage grinding ---------- Feb., 25
SAN ANTONIO, TEXAS
  San Antonio's Junior city halls ----- Jan., 119
  San Antonio's aorta ---------- July, 132
  Brush collection on a call basis ---- Aug., 22
SAN BERNARDINO, CALIF.
  "One Pump" filter plant ---------- Jan., 145
SAN DIEGO, CALIF.
  Keep out fish electrically ---------- Feb., 95
  Don't kill the parking-meter hen --- May, 125
  Sea-water conversion plant -------- June, 25

Issue & Page

SAN FRANCISCO, CALIF.
  Airport to use curved layout ------- Jan., 85
  Eye keeps tab on transit riders ----- May, 161
  Modern rapid-transit system -------- July, 123
  San Francisco answers questions --- Sept., 133
  Opinions about monorail ---------- Oct., 133
SANGER, CALIF.
  "Enlarges" parking lot with lights Dec., 126
SANTA CRUZ COUNTY, CALIF.
  High-rate filters ---------- Oct., 93
SANTA MONICA, CALIF.
  Water-supply program ---------- Apr., 147
  Alleys are clean in Santa Monica --- June, 49
  Novel refuse transfer station ------- June, 122
  Auditorium hosts the oscars ------- Sept., 97
  They asked and were willing to pay Oct., 141
SASKATOON, SASKATCHEWAN, CANADA
  Residential incineration program --- July, 98
SCHENECTADY, N. Y.
  Snow fighters on three shifts ------- Jan., 80
SEATTLE, WASH.
  Parking in Seattle ---------- Jan., 107
  Refuse collection safety pays off --- Oct., 110
  Get the wires underground -------- Oct., 117
  Seattle's plastic police boat -------- Dec., 31
SIOUX CITY, IOWA
  Punched-card accounting ---------- Jan., 75
  Semi-actuated signals ---------- May, 122
  An easy-to-use storage building ---- Aug., 38
  Thin coatings stop spalling -------- Sept., 107
SMYRNA, TENN.
  Understanding federal aid --------- Oct., 7
SOUTH BEND, IND.
  A subdivision lights itself ---------- Aug., 129
  Vacuums for light litter ---------- Sept., 189
SOUTH CAROLINA
  "Revolutionary" soil cement ------- Apr., 9
SOUTH MILWAUKEE, WIS.
  $62,000 saved in one year ---------- Feb., 77
SOUTH PITTSBURGH, PA.
  Chemicals in liquid form only ----- Sept., 93
SOUTH PLAINFIELD, N. J.
  Build sewers today for tomorrow --- July, 100
SPOKANE, WASH.
  Old-fashioned but still good ------- May, 163
SPRINGFIELD, ILL.
  Springfield features its snorkel ------ Feb., 31
  Tips for swimming pool operators -- Oct., 112
STORM LAKE, IOWA
  Try this flusher for size ---------- Nov., 29
SUN CITY, ARIZ.
  From golf balls to grading -------- Sept., 37
SWEETWATER, TENN.
  Our future was at stake ---------- June, 199
TACOMA, WASH.
  Self-supporting refuse program ------ Jan., 78
  A festival boosts city economy ------ June, 179
  New type of seal coating ---------- July, 97
  First city-operated moving sidewalk-- Oct., 91
  Public support brings new lighting Dec., 114
TARBORO, N. C.
  Sewage purification ---------- June, 106
TARRYTOWN, N. Y.
  Kids keep on playing at night ------ July, 137
TEMPLE, TEXAS
  One sweeper, two crews ---------- Jan., 29
TENAFLY, N. J.
  Tenafly's civic center ---------- May, 116
  Largest biofilter plant in the East--- Nov., 96
  White uniforms for sanitation and safety ---------- Dec., 33

Issue & Page

TENNESSEE
  Bid prices to Tennessee cities ------ Apr., 127
TERRE HAUTE, IND.
  Urban-renewal program ---------- Feb., 106
TEXAS
  Rural-urban conflict declines ------- May, 181
THORP, WIS.
  Soil-cement street program -------- June, 104
TOKYO, JAPAN
  Curb parking and garages in Tokyo-- Oct., 133
TOLEDO, OHIO
  Street cleaning costs ---------- Jan., 139
TONAWANDA, N. Y.
  The air-conditioning was free ------ Oct., 107
TRENTON, N. J.
  Who's the successful bidder ------- May, 167
  Largest biofilter plant in the East-- Nov., 96
  White uniforms for sanitation and safety ---------- Dec., 33
TWO RIVERS, WIS.
  We learned from experience -------- Oct., 104
VANCOUVER, B. C., CANADA
  Vancouver's five-year plan -------- Feb., 122
VENEZUELA
  City convention aids local government Jan., 127
VIRGINIA
  Refuse collection charges ---------- Apr., 36
  6,400 miles of traffic lines ---------- July, 126
WALTHAM, MASS.
  Warning signals ---------- Dec., 31
WASHINGTON, D. C.
  48 trucks serve 56,800 dwellings ---- July, 25
  Shoring without pile-driving ------- July, 106
  This movie stars a commission ----- Dec., 25
WASHINGTON COUNTY, WIS.
  A five-ton crane is a handy thing--- Nov., 110
WATSONVILLE, CALIF.
  New plant separates sewage flows--- Apr., 93
WAUKESHA, WIS.
  Paved streets are still cheaper ------ May, 13
WEIRTON, W. VA.--
  Modern sewage plant ---------- Feb., 101
WEST HARTFORD, CONN.
  Improved fire rating ---------- Sept., 144
WESTLAKE, OHIO
  Small suburb planning ---------- May, 169
WESTMOUNT, QUEBEC, CANADA
  Westmount will melt its snow ----- Sept., 24
WICHITA, KAN.
  A master traffic-controlled system--- Sept., 129
  Citizen groups, with PR society help, win voter approval for Wichita bonds ---------- Nov., 153
WINCHESTER, KY.
  You don't need a tall stack -------- Dec., 74
WINDSOR, CONN.
  Garden apartments are good ------ Nov., 99
WINTHROP, ME.
  Contract snow plowing ---------- Dec., 86
WORTHINGTON, MINN.
  A separate sewer department in a small city ---------- Dec., 76
WYANDOTTE, MICH.
  Central garage ends duplication ---- May, 87
  Bright-dim downtown lighting ----- Aug., 130
WYOMING
  A few words on traffic engineering-- June, 140
YORKTOWN, N. Y.
  Sets "tax-balanced" land-use plan-- Dec., 88
ZANESVILLE, OHIO
  The aerial surveys come first ------- Oct., 173



Left to right: Benjamin Groebner, Chief Engineer of Sleepy Eye power plant; George Stinedurf, Service Engineer, Cooper-Bessemer; Clair Howell, Howell Bros.

Sleepy Eye is wide awake to proved economies

Sleepy Eye is a town in Minnesota that is anything but sleepy. They bought a Cooper-Bessemer LS-8 supercharged engine . . . 2120 hp for 1500 kw service. Proved by millions of operating hours, rugged LS engines have an outstanding record for reliable, low-cost performance.

Thus, engineers of Sleepy Eye *knew* what they were getting when they decided on this proved power unit to meet the growing needs of their utility.

This Cooper-Bessemer gas-diesel engine is equipped with Turbocooler to increase its efficiency.

Call our nearest office for help in planning your power or compression facilities.

Cooper-Bessemer

GENERAL OFFICES: MOUNT VERNON, OHIO

COMPRESSORS: RECIPROCATING AND CENTRIFUGAL
ENGINES: GAS · DIESEL · GAS-DIESEL
JET-POWERED GAS TURBINES

New Tractor Shovel brings new economies to small town

Michigan introduces Model 55A, early purchaser reports it does many jobs previously skipped (or handled by $10/hr. rental units)

Like many small communities, the Village of Pewaukee, Wisconsin, for years handled loading and clean-up chores with a farm-type tractor and various pieces of rental equipment. As may be expected, costs were high. But so too, reasoned the Village Board, would be the initial expense of buying a bigger machine . . . especially to a town of only 2000 people.

Then last spring, Aring Equipment Co, Michigan Distributor in Milwaukee, showed the new Michigan 1 yard Model 55A. Price, with trade-in, under $10,000. Back-hoe, snow plow, sweeper, a lot of other attachments could be added later.

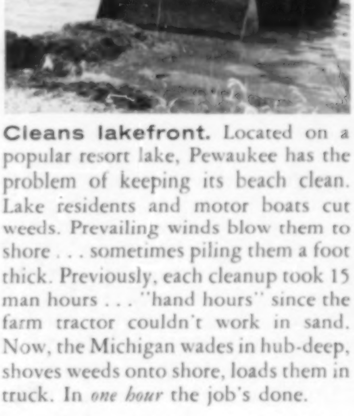
Everyone was impressed. It was easy to figure how this unit's four-wheel-drive, speed and versatility could cut expenses. Also, how it might handle the many jobs previously not done at all or, at best, done inefficiently.

"Since then," says Gary Boyce, Pewaukee Supt of Public Works, "we've used our Michigan *for everything*." For instance . . .

Saves $50 weekly rental at the sanitary landfill. The Village makes a monthly pick-up; between times, villagers dump their own trash and rubbish. Once a week a rented crawler would clean up; between times the dump was messy. Now, the Michigan, with 26 mph mobility, runs out every day or two. Clean-up is done quickly, the old $10 per hour crawler rental expense is eliminated.

Cleans lakefront. Located on a popular resort lake, Pewaukee has the problem of keeping its beach clean. Lake residents and motor boats cut weeds. Prevailing winds blow them to shore . . . sometimes piling them a foot thick. Previously, each cleanup took 15 man hours . . . "hand hours" since the farm tractor couldn't work in sand. Now, the Michigan wades in hub-deep, shoves weeds onto shore, loads them in truck. In *one hour* the job's done.

Stockpile-loads sand, salt, blacktop, stone. The power steer, power-shift Model 55A with 1 yd bucket heaps a 5 yd truck in five passes, 2 to 2½ minutes. Pewaukee's old farm-type loader took 5 to 7 minutes for the same job . . . *if* the material wasn't frozen.



Takes place of truck. When trucks are busy, the Michigan may carry its own load a block or a mile or more. Street patching is a good example. Here, the 26 mph Model 55A carries a yard of blacktop down the street—stops at potholes—operator or helper hand-shovels and packs in materials as needed.

Tree trimming. Due to inadequate equipment, this once was a chore rarely attempted. Now, the Michigan, used as a fast-moving lift-truck, raises a man up to 8 feet off the ground for trimming with chain saw or 18 foot pruner. Thus street lights have been made more efficient . . . traffic hazards removed.

These are but a few of the jobs where the 66½ hp Model 55A is saving time, trouble, and money for the Village of Pewaukee. Let us show you, first-hand, how it can do the same for you!

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY

Construction Machinery Division

CLARK® EQUIPMENT

2495 Pipestone Road
Benton Harbor 44, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario